

THE
Anatomical History

OF

Thomas Bartholinus,

Doctor and Kings Professor:

Concerning the

LACTEAL VEINS

OF THE

THORAX,

Observ'd by him lately in
Man, and Beast.

Publickly proposed by
Michael Lyserus answering:

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K. Pecquet (J.)

[See preceding.]

FREDERICK 4TH
KING OF DENMARK

BY THE
OF THE CHYLE

IN THE
MAY 1770
MAY 1770
MAY 1770



IN ALL HUMBLE
MANNER

TO THE MOST COMMAN
OF HIS MAJESTY

HIS SUBJECT
THOMAS BAYTHOLINS

DEDICATES AND
CONSECRAVES



The Anatomical History of Thomas Barbolinus, of the Lacteal Veins of the Thorax.

CHAP. I.

*The sum of those things which are
to be handled.*

Old age knows not all things which we do know,
Young men something to observation owe.

For,

No man so well can lay his count to live,
But age, use, things, some poverty still give, (know,
That what you thought you knew, you shall not
And what you once thought best, you shall forgo.

TRuly since the dissection
of the Body of Man had
its first conception, and
birth, from our Ancestors,
it never grew up to that degree of

perfection, but that it has often since, by frequent importuning of Nature, gain'd an addition to it self. Prudent Nature, weary of the Industry of one age, so playes with us, that she distributes, in the stops, and breathing whiles of Time, her most hidden secrets, to every one according to their proportion. We owe our wisdom to foregoing ages, and doe deservedly envy our posterity, who will perchance be more knowing than we; For we are not ignorant, nay, we are heartily sorry, that the universality of Nature hath never hitherto been drayn'd by us. Much remains to be done still, and much will remain, nor shall any who shall be born a thousand ages hence ever want occasion to adde something. Yet was there never any age more happy in the finding out, or more curious in the search of the secrets of Nature, than ours; for which happiness we return our thanks to Heaven, and to the inspective hands of the indagators. We
scarce

scarcely retain a shadow of the Antients, whom we now follow, not because they found out the directions, and eternal axiomes of Nature, but because their times were before ours. They did much, but so far were they from the performance of all, that they remain'd rather ignorant of infinite many things; seeing the greatest part of those things which they knew, is the least part of those things which the industry of following times has taught us. I will not, in detraction to ancient times, rehearse the particulars, nor with a tedious discourse at this time insist upon six hundred observations. I shall fall upon the vessel of the *Chyle*, very lately found, and its passage thorough the body; than which nothing more deliberate in Nature, or more profitable for us did ever come to light, being led by certain experience in the dissection of the bodies both of Men and Beasts.

The chief businesse is in the distribution of the nutriment. It is

confess'd by all, that the nutriment
 is prepar'd, by being first broken
 amongst the teeth; and there is no
 doubt but that the same after it
 is chew'd, is thrust down through
 the *Oesophagus* into the hold of
 the *stomach*. That it is concocted
 in the *stomach*, and by the *dilution*
 of *moisture*, the incision of it by
 the *sart humor*, and mixture of it
 by heat, it is chang'd into a *Chyle*,
 most like unto milk, has by others
 been prov'd at large, and by us
 elsewhere. But the *Chyle* which is
 made by this concoction, because
 it ought not to continue in the *sto-*
mach, which is only nourished with
 blood, and must be distributed in-
 to the whole body, it must be car-
 ried from the *stomach* as its *Termi-*
nus a quo, to those places which
 are to change it into blood, as its
Terminus ad quem, by wayes,
 which in all motion are necessary.
 And concerning these ways of di-
 stribution of the *Chyle*, *Anato-*
mists in all ages, have drawn a
 saw of controversies, so that we
 may

may find so many heads so many opinions. For some thought that it went immediately from the *Stomach*; to its *Terminus* or organ of *sanguification*; some others did fancy that it was thrust through the *Pylorus* into the *Intestines*, and its vessels; we shall in few words enquire into the truth of ev'ry particular, omitting for the present such things as might be spoken of the *Terminus ad quem*.

G. A. P. II

That the Chyle is not immediately carried out of the Stomach to the Organ of Sanguification.

Those who believe that the Chyle was presently snatched out the *Stomach*, omitting the *intestines*; they chose to themselves diverse ways. *Galen l. 4. of the use of the parts, C. 1.* Tells us, that those things which are hurtful of it, are driven downwards,

As,

and

Of the Lacteal Veins

and all the rest of it which was profitable of it self naturally, being made yet more profitable by the stomach, was distributed into those veins, which come both to the stomach and to the intestines. Where he admits of both the traductions to the Liver, the mediate and immediate. *Aquap.* in his book concerning the stomach agrees with him, but only as concerning the thinner Chylus, and sets down more expressly the Gastrick veins. *Carolus Piso* in his preface to his book de Secretis Colluv: chuses the same gastrick veins, the Epiploicks, as likewise the *vas breve* through which he deduces the Chyle to the spleen. But all these veins are suspected, because they are the vehicles of blood, and not of Chyle. Likewise nature hath in the Gastricks placed a valve, which suffers nothing to passe to the spleen by these vessels. But the *vas breve*, when it is inserted into the spleen, it carries rather the sound juyce out of the spleen, yet it rises oftener

ner from the *Ramus splenicus*, passing by the *spleen*. The opinion of *Piscus* is grounded upon a false supposition, since the *spleen* neither receives the *Chylus*, nor makes *arterial* blood: as is prov'd by us elsewhere. But we shall to the *waterish Chyle* of *Galen* and *Aquap.* assigne more convenient ways.

Gassendus, and *Veslingius*, and another *Italian*, who published this title to this purpose, did probably judge that the pores of the *stomach*, and the porosities of the *liver*, or of the neighbouring *Spleen*, did suck up the thinner *Chyle*. But contrary to my opinion, since that is the common passage of *juices*, and the pores too narrow for the substance of the *Chyle*; nor do we find any sign of such rareness in the *stomach*, in the dissection of living creatures, I do not mention that by the same way there will be a passage for the blood, both from the *Gastrick*, and *Epiploick veins*, which are much

Of the Lacteal Veins

much thinner. Lastly, who can say against, but that it may turn another way than either to the liver, or to the spleen, since as Hippocrates says in his book of nutriment, they have one passage for moisture, one passage for breath, and are joynt in all their passions.

Cl. Corning. l. de Gen. Sang. c 6. derives it to the spleen by a distinct peculiar sort of vessel, which at sometimes may be discovered: but only the thinner Chyle which stays not for the opening of the *Pylorus*. He learnedly proves his opinion by diverse arguments, which we handled lately in our reformed *Anatomic*; for they are grounded upon such a supposition, as he afterwards ingeniously condemns: for we find dayly in the dissection of living creatures, and men, that the *Pylorus* is opened before the grosser nutriment be collected, and that the Chyle is distributed through the *Intestines*. And it is below the dignity of an

Ana.

Anatomist, to fly to ways unknown, where manifest ones doe appear. Certainly we never found these ways in the lesser adhesion of the *Spleen*, though when they were after food and drink immediately filled. And now after certain evidence, I imagine that that eminent man is of another opinion.

C A P I T U L U M III.

That neither the *Cholodochall*, nor the *Pancreas*, nor the ordinary so called *Mesaraicks*, are ordain'd for the carrying of the *Chyle*.

Those who grant that the *Chyle* passes to the *Intestines*, which was the opinion of many, and that a very true one, they must admit of such vessells which in the *Mesenterie*, or the *intestines*, first offer themselves to view. In the first *intestines*, or in the *Duodenum*, we meet with the *Porus Cholodochus*, and

and the *Ductus Virsungianus* of the *Pancreas*: *Gassendus* in *App. de nutrit. Anim.* calls it the *Chylodochus* or *Cholidochus*, being destined for its convenient position, not so much for the egestion of *choler*, as for the ingestion of the *Chyle*. But also there is a trajection of the *Chyle*, in some creatures which have not this *Cholidochus*. Yea there is a valve of the outgoing of the passage, or crooked obliquity of the passage, hindering its egress, and not suffering the juyce destined for nutriment to be mix'd with excrement, in this distribution. It is moreover observed, that the *Chyle* is distributed abundantly enough, in the *Mesenterie*, after that it has passed the bounds and extent of the *Cholidochus*. The obstruction which *Riolan* makes mention of in his *Anstropol. Nov.* the stopping of the *small Guts* and *Mesenterie*, is as much as nothing, since from those obstructions, death and an *Atrophe* does rather ensue, yea when near the *cacum*; by

by winding, an obstruction happens, as was found by *V. Fontanius*, who stops the *Cecum Ileon*, as was observ'd by *Hilden*, or the *Ileon* is really contorted, which in his dissection *Panarolus* did see, why does sudden death follow? why is not there any drawing of the Chyle then through *Chalidochus*? But so the impostume of the mesenteric and celiac kill'd the Wife of *Adriagius* in the *Cons.* of *Lalinus à font.* In the *Ductus Virsangianus*, there is a valve, or an inward Tumbler of the *Intestinum*, equivalent to a valve which does oppose it, which will not so much as admit a pin, unless it be by force: so much less choler, from the adjoyning parts of the *Chalidochus*, as in opposition to me *Higmore* is of opinion, *Lib. 1. Anat. disq. part. 2. Cap. 3. of Chylus*, which *James de Bask, de Corda, Sect. 2.* defends, by an experiment in my judgement impossible. Concerning which opinion you must see our *Reform'd Anatomist*, And to omit the rest

In the *Mesenterie* we have hitherto met with onely three sorts of vessels, *nerves*, *arteries*, and *veins*. The *nerves* are of great account, because they are only dedicate to sense, and obscure motion; besides in the *Mesenterie* they are very small, without moysture, nor are they hollow. *Galen* would have the *Mejaraick arteries* to draw out the *Chylus* for distribution, lib. 4. us. part. c. 17. but onely in little quantity. *Varol.* l. 5. an. c. 2. and *Spigelius* too, but when men only are in health. Moreover, though *Erasistratus* in sucking Kiddy saw *arteries* full of milke, yet were they no *arteries*, but *milkie veins*, obscurely by him observ'd. For the *Chyle* was never seen in the *arteries*, nor ought they to perform this function, since from very assured demonstrations of the *Circulation of the blood*, they carry nutritive blood to the *Intestines*, and bring back neither to the *heart*, nor the *liver*. Therefore almost all since the times of *Galen*, have resolv'd

join'd upon the *mesaraick veins*, who being themselves also pester'd on every side with difficulties, are of severall opinions. Some do divide them, as if part of them carried blood, others the *Chyle*: Others put a difference of time, that they should carry blood at one time, and *Chyle* at another. And lastly, there are other some, who beleeve that the same *veins* do at the same time carry *Chylus*, and carry back blood, as in Rivers we sometimes see a countercurrent. But none of them ever attain'd to Nature's purpose. We only beleeve what we touch with our hands, and see with our eyes. But in the *Mesaraick veins* there was never seen yet any *Chylus*, either mix'd or pure, always and in all blood only. But they are pittifully mistaken, in saying, That any *vein* carries blood back frō the *liver*, since both *ligatures* in living persons, and the position of the *valves*, shows that the reliques of the blood is brought back by them to the

the liver, and nothing returns. Nor do we, with *Riolan*, beleieve, that in time of necessity in all manner of obstructions of the *Lacteal Veins*, the *Chylus* is carried this way. Nutrition will rather cease, (as is said) and the creature will decay for want of nutriment. And what will he answer to the flowing of the *Chyle* into the *Intestines*? But we cannot pardon that old error in *Harvey*, a most quick-sighted *Anatomist*, since there was no need to confound those vessels, which Nature had distinguish'd, and since we know that the use of the *umbilical vessels* in an *Embri-
on*, and people of age, is different: and that lastly we doe not see the *Mesentericks* fill'd with the *Chyle*, if the influx of it be stopp'd any where else.

CHAP. IV.

*Compendious Narration of Aselli-
on his Lacteal Veins.*

Hitherto we have past through
the idle conjectures of others,
who have indeed lost their labour,
because setting aside their senses,
they have examin'd Nature accord-
ing to the rule of reason. In
which mire we must still have
stuck, if the felicity of *Caspar Aselli-*
us, an *Anatomist* of *Ticinium*,
had not discover'd to us a sort of
sore of vessels in the *Mesenterie*,
in the Year 1632: which he called
Lacteal veins, from the brightness
of their colour, to which Nature
hath entrusted the whole work of
the distribution of the *Chyle*. Tru-
ly ocular inspection teaches us,
that very many veins of its own
kind dispers'd about the *mesente-*
rie, are full of milkie chyle; which;
together with *Tulpius*, *Vestlingi-*
us, *Folius*, *Gassendus*, *Highmorus*,
we have often demonstrated at
Hessen.

Hessen. Twere wicked to deny credit to such open experience. The *Lactea* passe from all the *Intestinas*, as likewise from the *coecū*, but most often from the *small guts*, and in great numbers come to the *Jejunum*: from whence arising at the middle glandule of the *mesenterie*, where they are entangled like the branches of a Wild-vine; from thence they go partly to the *Liver*, along with the *porta*, by divers insertions, partly to the *Emulgent veins*, partly to the *Vena cava*, as after *Asellini*, *Walleni*, and all quick-sighted men have observ'd; so that we need not any longer doubt, but that the *Chyle* does goe this way, which by trying of ligature in living creatures you shall more evidently find. But the liquor within them shows that they are vessels different from the *Mesaraick veins*, which does either continue after death, or vanishes when the distribution is done, leaving only a little appearance of fibers; nor will their want

of

of pulse, white juice, and single coat, allow them to be *arteries*; and their cavity and many branchings, proves that they are not to be confounded with the *nerves*: And lastly, it is clear from hence, that they are neither fat, nor the receptacles of fatty matter; (which doubt was mov'd by *Gassendus*) because when the Corse began to be rold, they should rather be consolidated, than disappear. But we do not as yet grant to *Hippoc.* and *Felins*, that the *Chylus* is the *proxime* matter of fat, for reasons which we have set down in our *Reform'd Anatomie*, and commanded by *Riolan*, who contrary to his wonted custom, is our friend in this.

CHAP.

C H A P. V.

Pecquets new accomplishment of the Lactical veins observed by us in men.

HERE the industry of observers was at a stand, and did too credulously imagine that the work of the distribution of the Chyle was at an end. We seemed so much engaged to *Asellius*, that we needed not to make any further search, as concerning the *lactea*, But so far as he had drawn his lines, and set his mark. It was determined that they ended in the *Pancreas*, or middle glandule, and that they were circumscrib'd with-in the narrow bounds of the *Abdomen*. Quick spirits saw some scruple in the smallnesse of the branches, betwixt the *Pancreas*, and the *liver*, and did prophetically presage diverse ways, but as yet unknown. *Asellius* in his 3 table in his letter T. sets down the beginning of the *Mesenterie*, but if he had pursued it further towards

wards the *Spina*, he had found more, but the commendation of his diligence and invention he left to posterity. *Hippocrates* too, and *Martian* and *Castellus* his followers did by many conjectures imagine, that the *Chyle* was from the *Mesenteris* thrust into the *Paps*, but they named no ways but such as were unknown, and the *Pores* of the body. But *Joh. Perquet* of *Dijon*, a Physician in the City of *Paris*, has to the eternall renown of his name, lately augmented and lengthened the bounds of the *Vena* *liver*, having set out new experiments in *Anatomie*, by which he has discovered the vessels of the *Chyle*, hitherto unknown, and did assert it at *Paris* in the year 1651 publicly, after three years observations: which notwithstanding in three dissections and lesse shall be shown to others. He first of all found out these in sheep, dogs, and other living creatures dissecting them four hours after repast. And first that a receptacle
of

of the *Chyle*, did from the *Mesenteric* or these milkie veins of *Afellius* already known, come out, into which by severall milkie veins, all the *Chylus* is drawn from the *Mesenteric*. Next, that from the same receptacle there did creep up through the *Thorax* to the *Subclavialls*, other passages for the *Chyle*. He found out both of them by accident, being never heard of in so many ages, not thinking of any such thing, being only busied in finding out the motion of the *heart* in living dissections; for the bowels being taken out, and wiping off them the quantity of blood, happily there appeared to him this milkie liquor, and the white passages of the *Thorax*: after which he making further search, found the beginning of them about the *Diaphragma*, and the *Mesenteric*. Truly it is a wonderfull thing, that so apparent a businesse has hitherto been hid from every ones eyes, even from theirs, who with vain arrogancy

more boast that they have found
 the most of *Anatomy*. But
 we shall easily deserve pardon,
 who daily importune Nature to
 find out some new thing, and yet
 ingenuously confesse that we shall
 never find it out. Whence we re-
 main thanks to *Pecquet*, that he ra-
 ther describes our not finding out
 of these things, so our infelicity, than
 our carelessness. Being advertis'd by my Brother
Jacobus his Letter, a Phy-
 sician, and skilful Mathematici-
 an, who at *Blays* had made tryall
 of the truth of this experiment, I
 did solicitously enquire after *Pec-
 quet* observations, and being set
 to work by the care of this new
 business, so soone as I could
 get the Book, I did diligently
 look on together with *Michael*
 my friend, and well skill'd
 in *Anatomy*, in a living Dog, dis-
 secting him four hours after he had
 eaten his belly full, and found most
 of these things which he had ob-
 served, and set down in his figure:
 But

But I did imagine, since in so great motion of the living creature, and his extreme struggling with his pain, the milkie vessels are sooner perish'd, that I might have more successe in the experiment, if either the creature some hours after his repast, might be strangled with a sudden noose, or if a man condemned, and being hang'd, after he had eaten a good breakfast, might be immediatly open'd; because then the motion of the *Thorax* being hinder'd, and respiration being stopp'd, the humors which were distributed would stay in the same position, nor would so easily stir, by his pain in cutting. Having resolv'd upon the way, the event was according to our wish; and having made many experiments in dogs, at last we got two mens bodies, by publick consent, and grant of the most gracious King *Frederick* the III. which had bin well fed, and were otherwise to have suffered upon the Wheel, and were to have been hang'd in Chains, upon which

which, both in the publick School of *Anatomic* by solemn demonstration, as also privately, we did so much the more diligently search, because we were the first that made this essay in a mans body. The first corps we cut up, was of a fellow that had kill'd a child; the other was the body of a Thief; one of them was lean, and his bones scarce holding together: the other was fat, and sound at all points. Both of those bodies was fill'd sufficiently with meat, and wine five hours before their breath was stop'd. In the first, we saw the *Mesentericals*, *Looseals*, and *Thoracicks*, full of *Chyle*. In the other there was not so much as any appearance of *Chyle* found in the vessels; neverthelesse we were not frustrate of our hopes, for in the *Mesenteria* the *Glandula Lumborum* did appear, and in the *Thorax* the passages destin'd for the *Chyle*: which we took out with the same ease, as we had done formerly in the many experiments which we

had made, in the dissection of many creatures, knowing the place and way how to doe it, to a hair. In the first we shew'd the three *Lumbares Glandulae* full, in the place of *Pecquets Receptacle*, and outward insertion of the *Thoracica Lactea*, into the *Sinistra Axillaris*, clearly to be seen in three branches. Our chieftest care was about the other, seeing the same *Glandules* in the inward or internal insertion of the *Lactea Thoracica*, which we viewed singularly well, together with the valves, by the help of a pair of bellows, and other assistants of the knife. Let no ingenious man doubt of our truth, and sincerity. We never did cozen nor cheat the world. Yet I know there will be some, whom either envy, or contempt, will carry out into prejudice. But away with that generation of men; there belongs Affizes to the Law, let them try it if they can, if not, let them follow our foot-steps, and let them leave off to doe ill, and be ill reported of.

of. In the mean time, if they
accuse me of a lye, I have
testimonials by me; and wit-
nesses both great and small;
and very honourable Spectators
of all sorts, who were present
with us, both at our private and
publick dissection; Especially the
*Illustrious and Magnificent Noble-
man, the Lord Christianus Tho-
mas of Strongaard, Knight Baronet,
Great Chancellor to the Kings
Majesty, and a most bountifull
Protector of the Vniversity, and
learned men, and other worthy
and Noble Persons, whom the
newnesse of the businesse, and
their accustomed favour to me,
had drawn to this Spectacle of
Nature; as likewise a great many
most excellent Physicians, and
most skillfull in Anatomie, Iaco-
bus Fabricius, Olaus Wormius, Si-
mon Paul, Paulus Morbini, Hen-
ricus Fuires, Iacobus Finokius,
and other of the Kings Profes-
sors, and a most honourable As-
sembly of choice Students. Who-*

soever will not give credit to so many, and to men of so great account, let them be of no credit for ever. But we did observe a diverse frame of these new vessels in men, and beasts, according to the diversity of the *Species* and *Individuals*, as in the ensuing relations we shall more accurately set down, according to our accustomed Method: especially insisting upon men, because the first inventor of *Anatomic*, did only use dissection in beasts, and has adorn'd his observations with such obscure varnishes, both in his words and sentences, that the Reader having read him never so often, still remains doubtful.

C H A P. VI.

The Anatomical history of the
Lateral Lumbar Glandules.

The first receptacle, which we
said was lately found under
the *Mesenteria*, because it re-
ceives the *Chyle* from the milkie
Mesentericall veins, *Pecquetus*
sometimes calls the milkie stream,
the *Chylificall* lamb, the store-house
of the *Chylus*, the bladder of the
Chyle, &c: But these names are
only fitted for beasts, in whom the
concrevisc is more apparent than in
men: Yet the name of bladder is not
so convenient, because it contains
nutritive juyce, and no excrement.
The most famous *Io. Horn, Anatomist*
at *Leiden*, calls it the milkie
bagg, meeting with some such
thing in the *Mesenteria* of a dog
before he saw *Pecquet*; we by one
common name will call them the
milkie lumbar Glandules, because
those which in men and beasts we
have

have seen are much of this nature.

Their place is under the centre of the *Mesenterie*, which sometimes is directly placed on the top of the other, under the *Celiac*, and *emulgent veins*, near to the *Lumbares Vertebra*, betwixt their *musculi* call'd *Psoas*, almost in the middle region betwixt the *veins* and the *Capsula Atribilaria*, which it touches, as also the *veins*, either immediately, or by emission of its branches. It does not altogether keep the very middle betwixt the *loyns*, but sometimes turns to the right; it turns in brutes for the most part to the left, at the descent of the *Cava*, near to the *left vein*, sometimes on both sides, betwixt the *Lumbar muscles*, under the *Cava*. The upper *Glandule* in men, takes to the right, under the rising of the *Appendixes* of the *Diaphragma*: The rest of those which are below, have the same position with the receptacle of Brutes.

Their deep position is both for
their

their safety, & for heat by reason of the vicinity of the *arteries*, and for the easier squeezing out of the *Chyl*. For in the fore part of it, it is pressed by the *Mesenterie*, at the side and hinder part of it by the *Vertebres* it is streightned, that the *Chylus* like butter in a tub, or like water may be squeezed out by the superposition of weight. Which pressure *Pecquet* thinks to be helped by the *Appendixes* of the *Diaphragma*, which are in a near place below it, they cannot be distended in respiration, but that they do distend the *receptacle* it self, and so force on the *Chyle*. These times the *upper Glandule* of a man more fitly and conveniently apprehends it being narrowly surrounded and imbraced by the *Appendixes* of the *Septum*: in my judgement the *Musculi lumbares* contribute some help to this business.

Their substance of it varies; In Brutes sometimes it is membranous, & appears at first sight viscous like

congeald flegm or fat. To the touch it is soft and smooth, being gript by the fingers, it is slipperie, and flagging, and shews that there is moisture contain'd within it. If be broken either with a knife or with ones fingers, there appears a kind of *cavities* betwixt the two *membranes* full of *Chyle*, or *whey*, which being drawn out, it appears sometimes of a *cavity* to hold two fingers, sometimes one, sometimes the *cavity* of it scarce sensible, and full of congeal'd and viscus milk. In men the substance is quite different, for its *Glandulous*, and solid, like the other *Glandules* of the *Mesenterie*, watered as it were with the *vena Lactea*, yet capable of *Chyle* in the least crook of it; But since the *concavities* of it is more hollow in doggs, than in men, I cannot but say that the cause has relation to their ravenousness.

As for the *number*, Brutes have but one, which is answerable to the greater *Glandule* of the *Mesenterie*

Sanaria, and it hath but one *ca-*
vitie. Yet we have likewise obser-
ved two in doggs, on each side
one, of a long figure, plac'd be-
twixt the *lumbar muscles* and the
vertebra, in which the *right* did
send a swelling branch to the *tho-*
rax, the *left* to the *Glandule* of
the *Mesenteria*, which notwith-
standing did communicate bran-
ches with the *right*; In men I have
observ'd three *Glandules*, two
greater ones plac'd one on the top
of the other, but yet interchan-
gably conjoyn'd with their *Ra-*
muli Lactea, betwixt the descent
of the *Cava*, and the *Aorta*, in the
angles, which together with the
Cava the emulgents make. The
third is higher and nearer to the
Diaphragma, and enters into its
nervous beginning under the *Ap-*
pendix. Yet I do believe that in
diverse men there is a diverse num-
ber, for in one man I saw more
Glandules in the *Mesenterie* than
in any which I had cut up before,
insomuch that some of them ac-
companied

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compained the *Aorta* even to the *Iliac*.

Their bigness; In brutes sometimes it is extended from the *Diaphragma* to the third *vertebrall* of the *loins*, being so broad that it takes up all the room which reaches betwixt the *lumbar muscles*, and the *Reins*, and their *Capula*: But the inner hollownesse is not so large, but of two, one, or half a fingers bignesse. In men, because there are more *Glandules*, each are in length 3 fingers breadth.

Their form; Their outward shape, is uneven in Brutes, yet smooth, of an ovall form or *Pyramidal*, so describ'd to us by *Peequet*, but it only appears of that figure when the *Intestins* lie upon the sides, for this is but a *forced* figure they drawing of their receptacle after them, for continuing in its own place it is of a flat form: Yet sometimes too I have seen it long. The *Glandules* in men are either round or long.

Their colour, is white and most like unto milk, which is not easily
lost

lost when they die, but continues in Brutes, either because of their double *tunicle*, which as it were is soak'd in thick milk, does not easily disappear, or because of the natural whitenesse of the *Glandules*, and the milky humour contain'd within them.

Their connexion. In the hinder part it adheres to the *Lumbares Vertebra*: In the fore part it is join'd to the *Mesenterie* by small milky *branches*, which doe carry the *Chylus* to this Cistern: you shall see them, if turning by the *Mesenterie*, together with the *Intestines*, you look diligently towards the left side. But whether they enter into the concavity of it, although with our eyes we cannot discern, yet it ought not to be doubted, since it does receive *Chyle*, nor are the inlets of the *laetea* apparent in the *Mesenterie*. In these trunks of the *laetea*, *Pecquetus* observes in his Explication, of his *Fig. I.* that the greater wideness of the *Tunicle* declares that

that there are valves there hindering the efflux of the *Chyle*. At the sides of it it is joyn'd to the *Glandules*, or *Capsula Atrabiliaris*, and to the *Reins*, either immediately, as in some dogs, yet so, that it may easily be parted with a knife, or mediately, by the *Ramuli Lactei*.

This we more plainly observ'd in Man. The new milkie *glandules* did disperse their little branches to that part of the *Pancreas* which is under the *Duodenum*, passing over the *left Emulgent vein*, and others too at the *left Emulgent arterie*. As also the *Glandules* did send milkie branches one to another interchangeably, the upper round one to those which were under it, and they likewise did impart those passages which were communicated to them to places adjoyning, as in the following figure we have set down. We did observe a wonderful thing in a dog, big and sound enough, opening him seven hours after feeding,

ding, passages very like to the *Lactea*, but sometimes milkie, sometimes with whey transparent, which did creep from the *Mesenterie*, or new *Receptacle*, partly upward toward the *Liver* together with the *Porta*, sometimes towards the *Reins* by the *Emulgents*, sometimes by that way where the *Vena Cava* comes to the *Iliac*, on which they were spread, and joyn'd with a membrane betwixt them, till the *Receptacle* of the *Bladder* hinder'd our further sight of them; which veins when we did stop them with a very small twist, did swell downwards, but towards the *Mesenterie* they were empty'd; so that we wondering at this, did suspect that this was a peculiar vessel destin'd for the *serum*: concerning which we have delayed our judgement til further observation. *Io. van Horne* wrote to me from *Leyden*, That he had observ'd only two milkie branches near the displaying of the *Aorta*, spreading themselves near to the *Crunals*. But from above near

to the *Diaphragma*, out of the *Receptacle* or *milkie glandules* proceed the *milkie branches* of the *Thorax*, which we shall handle afterwards.

C H A P. VII.

The explaining of the Figures.

THat every thing might be the more clear to the view, I called an Engraver, according to the President of famous men. For *Pecquet* in his discourse has intermingled somewhat of a dog, not of a biting dog, nor of a mad dog, but such a one as he had tyed fast, and taken out his bowels, because he is every where very modest in his writings. But we, though there were not wanting things which in other creatures we could have represented by Figure, yet we rather made choice of a man; that we might in a Figure represent such things as we, first of any, both

both sought for and found out,
concerning the *milkie glandules* of
the *Receptacle*, and the *milky veins*
of the *Thorax*, and produce it to
your infallible view faithfully, as
heretofore it was shewn to all that
beheld it.

Fig. I.

The *Receptacle*, or frame of the
milk glandules in their position is
set down, and such things as
are joyn'd to it.

- a The liver.
- b The stomach laid aside.
- c The bladder of gall.
- d The Intestinum Duodenum.
- e Part of the Pancreas under the
Duodenum, towards which
the milky veins from the Re-
ceptacles of the glandules are
spread.
- f The Lumbar glandules of the
Receptacle joyn'd in their
own position.
- g The Intestines turn'd down to
the left.

b The

- h* The right Rein.
- i* Milkie branches spreading frō the glandules in the superfice of the Pancreas.
- k* Some Ribs sticking out.
- l* The Trunk of the Vena Cava in its descent.
- m* The Veins Emulgent.

Fig. II. The new Lumbares glandules apart, and their milkie branches to the axillar vein, are shown after the bowels are taken out.

- a* The new upper milky glandule.
- bb* The two inferiour glandules apart, and interchangeably joyn'd with milkie veins.
- ccc* Milkie veins rising out of the glandules.
- d* The solitary branch of the Thorax.
- e* The right Emulgent arterie turn'd aside to the left, toward which the milkie branches pass out of the glandules.
- ff* The Kidneys.

gg The

- g The trunk of the arterie descending cut off below the heart.
- b The Back-bone.
- i A milkie vein of the Thorax creeping to the left subclavial, under the subclavial arterie.
- k The Oesophagus somewhat turn'd aside towards the right.
- l The glandules of the Thymus, which do cover and govern the milkie vein of the Thorax.
- m The subclavial arterie cut off.
- n The milkie valves of the Thorax, and the inward inoculation of the *Lactea*.
- o The valve of the internall jugular.
- p The axillar vein expanded, and dissected, according to its longitude, demonstrating the internal appearance of it.
- q The internal jugular.
- r The external jugular.
- s The progresse of the axillar vein to the arm. t The

Of the Lacteal Veins

- t* The Ribbs of both the sides.
- u* The Bladder in its proper seat.
- v* The Diaphragma cut up on both sides.

Fig. III. *The external insertion of the Lactea is seen in another head of a man.*

- a* The tripartite inoculation of the Milkie veins of the Thorax into the left axillar.
- b* The axillar vein entire.
- c* The external jugular vein.
- d* The left Clavicle.

CHAP.

C H A P. VIII.

The use of the new Glandules.

Moreover because it is but an empty commendation unless this that we are about be profitable, I will shew the chiefest uses of the receptacle, or of the *Glandula Lactea*, as much as the noveltie of such a strange businesse will permit.

1. Man has receiv'd augmentation in the number of his parts, being hitherto either imperfect, or by us unperfectly known; Anatomie is made more perfect, and the functions are clearer.

2. The use of the *Glandula* is more ready to receive any *Chylus* our of the *milkie veins* of the *Mesenterie*, and somewhat too to prepare it by help of the neighbouring hot vessells the *arterie* and the *vein*, and being in a little while prepared to thrust it out to the *Thoraces* and other parts, sense teaches us that there is *Chylus*

con-

Of the *Lactcal Veins*

contain'd there, and it is known that it receives it from the *Lactcal Mesaraick* by their compression; lastly the branching of the *Lactea* does assure us that it advances it upwards, yea pressing the *Mesenteric*, and wounding or tying the *Lactea's* in the *Thorax*, or thrusting them up with your finger, the *Chyle* either comes out that way, or swells the place next to the *Mesenteric*; Besides, when there is none of this milkie humour, such wheish humour is found in them as is seen in the *Glandules*.

3. They squeeze out the *serum*, being separated from the *Chyle* in that light preparation, and endeavouring to expell, either into the *veins* hard by them, or into the *emulgent arteries* to which they send branches, or into the *Capsules* of the *Strabilis* destined for melancholic, or lastly into the doubling of the *Peritonium*, in which they abide.

C H A P. IX.

Many conveniences by this new invention.

And from hence, the reason of many diseases in the body may be easily given, which we were either forc'd to be ignorant of here before, or by tedious traversing to seek for them.

The way is now clear, and the shortest cut found, by which drinkers who like *Promachus* will drink some gallons for his own share, or drink like *Bonafus* more than any man beside, who are not born to live but to drink, how they come to pisse this again so soon, and so abundantly.

For the ordinary way through the Liver, Heart, Arteries, Embolgent veins, Ureters, Bladder, is longer, and though *Aquapend.* take a great deal of pains to find a shorter through the Liver, from the Gastrick veins of the stomach, and *Piso* and *Conringius* through the

the spleen; yet he finding the Circulation, missed of his aim, & they having found out ways in the conception of their own wit, cannot demonstrate them to sense.

no 2. In a real Diabete, the drink is voided so through the Bladder, as it is received, and that in a little space. Galen tells us that everywhere Trallianus, Etius, and others, experience also reaches it, *Armenius Lusitanus* *Com. 12* *Cap. 94*. Tells us of a certain Roman, who using to drink unmixed wine fell into a Diabete, and whatsoever he drank he returned presently by wine just as he drank it. *Saxonia, Part. 1, Pract. Pract. 34*. saw a noble man of Venice, who for some years together drank always at dinner 34 glasses of wine, and yet quickly voided all, *Trincus. L. 10, Pract. c. 11* writes of one who in a burning fever drinking nothing but cold water, fell into a Diabete, that the drink was returned altogether unchanged, and keeping the same colour, consistence, taste and

and smell, *Zacutus Lusitanus* in his 2. book *Prax. Adm. Ob.* 71. Tells us of one that gave himself to the pure juyce of the grape, who did in a little time sup off a great many cups, and those no small ones, but whattoever he drank he pissed it presen^tly unchang'd, both in smell, tast, and colour, and that which is beyond all belief, that drinking in the space of an hour 30 lb. of water, he did return it by *urine* most clear as he had drank it, *Salmasius Cent. 2. Obs.* 95. knew a man who swilling himself often with *Newstadt* wine returned it raw by *urine* as it was before, in substance, colour, and smell, but that he would not tast it. *Benedictus Sylvationis*, a great Practitioner at *Padua*, told me, that he saw one piss red wine, of that same colour and smell that he drank it. I care not for strange examples, because I had experience of it lately in my self, in-fitts of a stone, which at sometimes like a hangman (that I may complain with *Erasmus*) does

torture me, having drank a little Rhenish wine for a *Diuretick*, afterwards it came out very clear in the Chamberpot, alike both in colour and substance, and that this continued for some days unchang'd: Let the Practitioners labour as much as they will in the distemper of the *veins*, in the loosenesse of the passage, in the weaknesse of the Attractive or Retentive facultie, yet they will never be able to clear themselves, unlesse they perfectly know these shorter ways by which without either change of the substance, or admixture of the blood, those things which we receive do passe through.

III. Now at last we come to know whence it comes to passe in some, that they have voyded milk or *Chylus* with their *urine*. *Nich. Flor. Serm. 5. tr. 10. c. 21.* saw in the Castle of *Itayre* a young man of thirty years of age, who every day pissed a great deal of *urine*, in which there settled as it were white thick milk to the quantitie of

of half a *urinal* full besides the substance of his *urine* that staid above it. *Schenckius* says that it was taken notice of by *Peter Sphererius*, that a certain *Polander* being troubled as he thought with an exulceration in the *reins*, did in the hospital of S.S. as he has often seen, pisse *urine* white and thick like milk, and lest you should think this milkie substance to be *atter*, let *Felix Platerus* come forth, who lib. 3. *Observ. p. m.* 836. had a long time experience of it in himself, without any hurt or inconvenience, that he did pisse *Milkie urine*, which settling had at the bottom a white matter as it were of thick milk about a spoonfull or two. *Ballonius* did resolve concerning the wife of *D. Du Bourlabe* against the rule of ancient Physicians, that she was not at all troubled with the stone in the *reins*, though she did pisse a certain sort of milkie substance, and being in whitenesse, lightnesse, and every way like reall *atter*; Perchance

imagining that some hidden impostume of the *Mesenteric* was the cause of her milkie urine, which is but little different from our opinion; other things which are mentioned by *Actuarius*, concerning white *Urine*, l. 1. *Præu Urin.* c. 2. and by *Theophilus*, though they might make for our purpose, we willingly wave them.

IV. 'Tis easie for us to see why stone-consuming Medicines given to those that have a pain in their veins, does presently ease them; as likewise such as incite to lust, as pulse, &c. doe shortly, and without stopping of the passage come to the *Arteries Emulgent*, and *Spermatick*, because in the accustomed, and hitherto admitted journey, which is longer, the virtue of the Medicines would easily be dull'd.

V. Nor do we doubt any longer why in drinking of *Diureticks*, they make an impression of smell and colour in *Urines*, as it is known of *Turpentine*, *Cassia*, *Iuniper*,
and

and other things; upon which there is extant in *Actuarius* a pretty story, *lib. 1. de Jud. Vrin. c. 20.* of a servant, who by his Masters order having taken a bitter *Trochisc* mix'd with *Oxymel*, which the man being peevish, sick, and daintry, did loath, he piss'd black whilst he was going of a journey, and was afraid of death, if he had not call'd to mind the Physick he had taken.

VI. How and by what near way many things swallow'd with meat are return'd with urine, any body may guesse. The story of the *Fenetian* Virgin in *Alexander Benedictus Schenkius lib. 3. Obs. 9* in *Sanctorius l. 14. Meth. vit. Err. C. 11. Pareus lib. 24. c. 19.* and by others too is affirmed, which had swallowed a hair bodkin four inches long, and after four years piss'd it out of her bladder, envelop'd with calculous matter. *Claudius* in *Resp. Med. 40.* *Laugius* in *Ep. p 745. Sancto. l. d.* do torment themselves to find the

ways, but what ways soever they chuse, they will be very far from the purpose, and yet not free from hurt. But ours is very short, & not dangerous. So judg likewise of the rest. That nothing is more ordinary than pissing of hair, *Tulpius* observ'd periodically in the Provost of *Hornes* Son, who every fourteenth day piss'd hairs a full inch long for four dayes together, with a great deal of stopping in his water. *Nic. Flor.* saw some likewise of the same bignesse. *Schenkius* had bundles of hair which a woman piss'd. *Zacutus* saw another that piss'd hairs a handbreadth long, thick and hard like Hoggs bristles. 2. *Prax. Adm. Obj.* 63. *Hildan* does endeavour indeed to prove in his observations to *Hestius*, that these things come all of humor, but fails in every one of them; seeing real hairs that one swallowes with their meat are easily discern'd from scorch'd humors. Such things as have lately been voided would appear like miracles, unless

unless our late Inventiō of this way were called into assistance, which are read in other Authors every where; namely, *Parsley roots*, witnessed by *Julius Alexandrinus*, *Toadstools* in *Nic. Florentin. Flies* by the report of *Zacut. l. 2. Prax. adm. obs. 301. Aniseeds* taken after meat, and coals, and pickles of weed-cocle, as *Hildan* has observed in his Anotations upon *Barley chaff*, in *Plutarch lib. 8. Symp. Probl. 9.* A whole sallad too eaten by a Maid at *Amsterdam*, which *Jo. Van Horn*, an Anatomist of *Lyden* did there also lately observe.

VII. Beside, having now a little more insight, we know why the Dropsie does presently after drinking swell up the belly, which not very long agoe I observ'd in a special friend of my own; namely because of the filling of the *Tunicle* of the *Peritoneum*, in which the *milkie glandules* are hidden. Nor is it hard to give the reason why the Hydropsie is many times ended

by *Diureticks*, and dissolv'd by *Urine*:

VIII. Lastly, whence arises the *Atrophie* of the parts, especially of those of the *Thorax* which draw *Chylus* out of the *Milkie glandules*. At some times the *Milkie Receptacle* is press'd together, and hinders the distribution of the *Chylus*, it is obstructed, and suffers inflammations, and other tumors. That we saw in the dead body of a man, in which all things were inclinable to an *Atrophie*, except his *Liver*, which was sound; his *Lungs* decay'd, and strak'd like marble, with *Bubo's* in his *groyn*, *Gangraw* in his feet, & other signs of a very ill habit of bodie. One of his *Milkie glandules* was sound, the other was red, as if it had been inflam'd, and full of ulcers. Whence his *Liver* was indeed sound, and many of his *Milkie meseraick veins*, but his *Milkie veins* of the *Thorax* were not very full, or swoln with *Chylus*. I do remit other things concerning the utilitie

tie of this Invention till another time, that of so much Corn, I may leave the stubble.

CHAP. X.

That the Milkie branches doe likewise reach to the womb.

VWE did before draw out the distribution of the *Milkie branches* out of these *new glandules* in the *Abdomen*: There ought likewise experiment be made, Whether or no in women with child they arive to the womb? I dare not doubt of it, because *Hippocrates* has foretold us in his *Book of the Nature of Children*, that milk does flow into the womb; to wit, the white juice of the nourishment (which is likewise squeez'd out into the paps) for the nutrition of the *Embryon*, and that it is attracted in the womb, by the mouth of the *Embryon*. Of late *William Harvey* has underta-

ken the defence of this opinion of the famous *Cois*, heretofore abandon'd, *De gen. Anim. Exer.* 57. becaule, 1. in the mouth of the Chick in the egg there is water found. 2. In the *ventricles*, and the gorge, and in the first *Intestines*, such matter, and like thicken'd milk is seen. 3. There is in the womb excrements in the greater *Intestines*. The Anatomists call it *Meconium*, which in Children new born we doe daily take notice of. 4. Near to the *Anus* there are found dung in Chickens, about the XVII. day, and the same before the Birth are thrown out in the *Secundine*. 5. Both the bladders are full of *Choler* and *Urine*. 6. The Infant sticking in the neck of the womb, if you put to your finger will suck it extremely, and when he comes to be bigger, hardly will he forget that custome. It is therefore probable, that he has been long accustomed to be nourished after that manner. 7. To this add, that

that *De Cartes* has observ'd, that a Calf, before it was brought forth, in the neck of it had grasse the length of ones finger. 8. Besides, sometimes there is heard crying in the Womb, which is hardly utter'd when the mouth is shut. Such in Children not yet born, *Libavius*, *Albertus Magnus*, *Livius* in his 24 Book, *Weinrichius* of Monsters c. 26. *Fincelius*, *Cassinius* l. 3. *Hier. Sect.* 2. *Sennertus* lib. 4. *Prax. part.* 2. *Sect.* 5. cap 8. *Cl. Salmasius* in his answer to *Beverovicinus*, have observ'd, and our *Huitfeldius* in his History of King *Christian* the II. and in our Countrey we have had two presidents of this. But the milk or *Chyle* flowing out of the wombe, affords more pressing arguments for the proof of this. *Laurentius* in his lib. 2. *Anat. Quest.* 10. witnesses, that he has seen very many women with child to have piss'd through their womb and their bladder great abundance of milk. Which he ascribes to the correspondence of the womb

womb with the paps : I should more easily ascribe it to those common milkie passages ; seeing I likewise remember in women with child, near the time of their birth, I have observ'd a matter to have flow'd from the womb most like to milk in substance, colour and consistence , and the Midwives take that as a certain sign that their delivery is nigh. *Zacutus lib. 2. Prax. Adm. Obs.* 143. observes in a woman that carried a false conception, that twenty dayes through her womb their flowed so much water most like to the whey of milk, as if it had been from a Spring, that he did beleieve that there flowed from her every day 5 or 6 pints without either grief, heat, pleasure, or any sharpnesse at all. Many times too Physick receiv'd comes untouch'd to the womb by this very short passage. *Jo. Hor-nius* testifies of saffron, that it goes speedily to the womb ; insomuch, that a woman not being able to bring forth, giving her some saffron,

ron, the child came forth dyed with saffron. *Henricus ab Heer* in his *Obs. Spad.* 14. relates, that he gave to the Wife of a common Souldier being in hard labour, saffron, with other things, and that in lesse than half a quarter of an hour, she brought forth a boy covered with a saffron dye, inso-much that some moneths after the colour did not depart.

C H A P. XI.

The branches of the Lactea to the Thorax.

VVE see briefly the dispersions of the *Lactea* thorough the *Abdomen*, we must now pursue them further in the *Thorax*. Indeed *Asellius* the first Author of the *Lactea*, Cap. XIX. never admits them to passe beyond the Belly, nor does he find them which passe from the *Porta* any where else, which with him we have hitherto beleaved, but *Pecquet* has told us the same businesse after
ano;

another manner, and we our selves have observ'd it thus.

From the upper part of the *Rectacle* immediately under the *Diaphragma*, there comes forth in some dogs two swelling branches, in some but one, but bigger, as they doe in Sheep, lying upon the middle of the *Spina*. In a man there arises as many *milkie branches*, as there are *new glandules*, which through the middle of the *Spina* pierce the *Diaphragma*, and by mutual insertion two of them are joyned about the first *vertebre* of the *loyns*: Another branch comming out of the second *glandule* about the twelfth *vertebre* of the back, enters a little above the rother insertion; but the third rising from the third *glandule*, is to be seen near to the eleventh *vertebre*; from thence it rises as a solitary branch through the middle o'th' back, by the side of the *Aorta*, and the *veina* *ζυγ* *α*, betwixt both under the *Oesophagus*, to which, as they likewise, it is firmly knit by its *membranes*. Or
if.

if you please to begin the distribution of them from above, About the eleventh *vertebre* of the back the solitary passage of the *Lactea* is divided into two branches, of which the left goes directly down to the left side to the *Glandula Lactea*; The right below at the twelfth *vertebre* is again divided into as many branches, of which the right after the same manner in the *vertebre* of the *loyns*, is first divided in two, and one of these little branches descends to the higher round *glandule*, the other to the long *glandulis*. In some dogs, as we said before, two white branches come forth from the *Receptacle*, of which the left above the *Diaphragma* being bigger than the right, *Pecquet* calls *Ampulla*, but the right he calls *Alveus*, both of them he calls *Alveus Ampullascus*, going towards the left. Both of them when they are there lying upon the *spiral* of the back, passe through the region of the *Diaphragma*, and growing lesse by little

little and little, they goe by a di-
 verse way to the eleventh *vertebre*
 where by crosse branches they are
 joyn'd together, which like conjun-
 ctio we also meet with at the tenth
vertebre of the back, whether it be
 for strength or cōmerce of humor,
 so turning out and in they go cleft
 to the seventh, sixth, and fifth
vertebre, where again three such
 crosse branches are seen making
 paralel lines by mutual conjunctio
 till they come to the fourth *verte-*
bre, where they goe a little aside
 from the middle of the *spina*, yet
 are they joyn'd first & meet with a
 mutual insertion. So *Pecquet* sets the
 down, & describes them in all dogs,
 which we saw likewise in a dog,
 but for the most part there is but
 one branch from the *Diaphragma*,
 creeping directly upwards without
 any of its fellow furrows, yet more
 swel'd & larger, neer the *Diaphrag-*
ma, so that I think nature differs in
 every one, and no certain rule can
 be set of this distribution.

All along this way they are
 white

white, because of the *milkie juyce* which they contain, which we thrust upwards with our finger, or squeeze it out of them being open flowing out too of its own accord; yet sometimes like glasses of water they are transparent being full of wheyish humour. Sometimes the *Chyle* being wanting they appear indeed but are hardly lever'd. But putting in a pipe you may easily see them. Being tyed they swell downwards, and if you thrust them with your finger you shall not be able to bring back the humour within them, nay if you hurt the inferiour parts the milkie humour will stand still between the *valves* above. For they have *valvs* set down by *Pocquet* in his first figure, which hinder the descent of the *Chylus*, appearing rather outwardly than inwardly, by the consistence of the humour & *ligature*, for by reason of the finesse of the vessels, you can hardly discern them when you open them; we do likewise by immision of a pipe

pipe, discern those *valvæ* through which we cannot breath or blow downwards. The substance of these *Lactea* is very thin, that unless you take a great deal of care they are easily hurt, and the liquor being out of them they disappear or are hardly known. They are small in the *Thorax*, towards the *Diaphragma* they are bigger where they appear like *Glandules* a finger thick. They are fastned below as is said to the *Receptacle* or *Milkie Glandules*, in the hinder part of the to the *Spinal* of the back, in their fore-part to the *Oesophagus* to the which they do likewise send branches, at the sides they are eyed very fast to the *fine pari vein*, and the *arterie* of the *Aorta* by the *Membranes* of the *Pleura*, yet sends no branch to it, nor ought it, for the *Chylus* should not be carried through the *arteries* for the nourishment of the parts, which are only nourished by *Arterial blood*. For *Cl. Conringius* being by me call'd to this observation, did ob-

observe divers branches dispersed into the *Vena Cava*, as in an Epistle written to me he does witness. The upper is joynd to the *Clavicles*, as afterwards shall be said

C H A P. XII.

The insertion of the milkie veins of the Thorax into the left Axillar.

NOW must we enquire after the insertion of the *Milkie veins* of the *Thorax*. From the third or fifth *vertebra* of the back, where they depart from the *Spinal*, through the midst of which they crept all this way, they turn a little to the left and creep up under the *Oesophagus*, and the *Aorta*, and under the *Subclavial arterie*, and the *Glandules* of the *Thymus*, they goe forward to the *left clavicle*. Here *Pecquet* differs, who writes and cuts it as divided in two branches, from the third *vertebra* of the *spinal*, of which one on the left side goes to the *left clavicle*, and that on the right side

to

to the right *clavicle*: But the Graver seems to have added something to this new invention, or else the conjecture of the inventor. For we could not observe that it was parted on both sides, neither in Brutes nor in Men, unlesse Nature deal otherwise with us in *Denmark*, then she does with those in *France*. But that it does always frō the third *vertebra* turn towards the left side, as we have set down in the Cut of a man. Putting in a bellows below, we could see no signe of a vessel on the right side, nor could our sight find out any thing like it. Nor do I think it can be otherwise, which I likewise found in man making a diligenter search by more eys than mine own: Because at the rysing of the *spinal* near the throat on the right side, the *Axillar vein* arises immediately from the *Cava* near to the *Basis* of the *Heart*, but in the left it stretches out further, so that Nature seems to have design'd a more convenient place for this insertion.

An-

Auzotius, a man of profound learning, sayes that he saw and kept this vessell tyed at both ends, for many days, as he confessed to my brother *Erasmus Bartholinus* whom we praised before. But let me never be trusted by *Auzotius* or any body else, if ever I observ'd any insertion upon the right side. Nature sports her self many times, and did perchance in one corps reveal that to him, which a great many have denied to us. The solitary branch then on the left side stretches under the *Oesophagus*, *Thymus*, the arterie of the Thorax and left clavicle to the left axillar vein, and that sometimes with one branch only, sometimes with three, sometimes with a more numerous division through little holes, or one hole if there be one insertion, immediately where the outward *Jugularie vein* pours it self into the *Axillare vein*. And I have observ'd the entrie of it immediately under the outgoing of the outward *Jugularie vein*, and that
in

in small *Glandules* it lay in the distance of the *Muscles* of the neck. Where there is but one insertion of a single branch, we have observed in men and in dogs that the hole is longer, and that there is a Miter-like *valve* of most thin texture plac'd upon the hole in the concavities of the *Axillar*, which hinders the regresse of the *Chyle* and of the blood downwards, and its ascent to the joynts, because it looks only towards the heart, and in the hinder part it is turn'd towards the *Axillar*.

We did not observe *Milkie veins* to passe any further, or reach to the head, because near to the *jugular* there stands a *valve*, or to the joynts, as well by reason of the *valve* of the *Arm-veins*, as for the continuall déflux of blood, whence by squeezing we came to know that no *Chyle* could come to those parts. It was a very singular thing which we saw in a dog, which we did cut up seven hours after his repast, certain whey-
ish

th vessels by his foremost feet, as in the *abdomen*, which went along by the *veins* of the feet on both sides of them, being transparent, like those in the *Thorax* and *Abdomen* observ'd by us, the ingresse & the egress of which we could not then perceive, but being intercepted by *ligature*, they swell'd upwards towards the joynts.

C H A P. XIII.

The use of the milkie veins of the Thorax.

THE use of the *Milkie veins* of the *Thorax*, is the same with that of the *Meseraicks*, if you make a difference of the bound from which, and the bound to which. For the new ones carry the *Chylus* out of the new *Milkie glandules* or *Receptacle* of the *Mesenterie* to the *Subclavials*. The *Lactea Mesaraica* carry the *Chylus* from the *Intestines*, either to

to the *Liver*, or the *Receptacle*. It is manifest that it carries *Chylus*, because in the dissection it flows forth, and ligature shows it. Its insertion shows us likewise that it is infus'd into the *Subclavial veins*, whence also their flowes a milkie humour, and wind will likewise get through if you unty the string, so that sometimes the branches of the *Vena Cava* will look blew with it, and the Concavity of the *Thorax* look white. At no other time I ever saw milk come out of the *veins* of the arm being opened. Often in blood drawn away by opening of a *vein*, which in all other respects was good, I have seen whey-like milk. To a *Hafman* maid for the stopping of her *flowers*, I gave counsell at the time of their comming to cut open the *Saphana*, and the time betwixt to open a *vein* in the middle of her arm. Before she could put my last advice in practice, she drunk milk which she lov'd. Whence instead of whey I saw milk in her blood, which

which at first I did interpret for rotten blood, but a little after I alter'd my opinion, since the maid a little while after grew to be very well. For a milkie colour mix'd with the blood like to atter, signifies extinction of naturall heat, and threatens present death, as beside others, *Fr. Joel* observes, l. 4. *Pr. Se. 5. & Actuarius* rightly observes l. 2. de *Caus. Ur. c. 15.* That by reason it is found, that blood changes to white colour, when it is alterd from its own colour, being so alterd and chang'd by the Laws of Nature; which according to the doctrine of *Galen* is confirmed of milk and sperm. So in *cacochymical* and *scorbuntical* people, or *leprous*, I have often seen in blood-letting a wheyish milk among their blood; and a most eminent man, *Olavi Wormius*, the ornament of our Countrey, and of the world, sayes he has seen it often in this City. It was hitherto thought a wonder, and related for a fable or a miracle, which some Ecclesiastical

D stories

stories do relate of Saint Paul, who was beheaded under the Empire of *Nero*, that a stream of milk flow'd out of his neck. This Relation had severall authors, but more especially the Acts of St. *Nereus*, and St. *Achilleus*, St. *Ambr.* Serm. 68. *Chrysostom*, whose testimony *Baronius* brings too, Ann. Chr. 66. Sect. 11. and approves it. If the story be true, by finding the milkie veins of the *Thorax*, we shall easily find the way and manner of it. The Branches of the *axillars*, or rather the insertion of the *Lactea* into the *axillars* was dilated, and did gape with doors wider than ordinary. Others say, that it was not pure milk, but three fountains of sweet water they confesse did flow, which are yet to be seen in the way betwixt *Ostia* and *Ardentine*, and gave name both to the Church and Monastery, concerning which see *Blondus* l. 3. *Inst. Rom.* *Onuphrius Panninus*, de *Basil. Roman.* *Schoetus* part. 2. *Itin. Itall.* and others. Some do likewise

likewise add, that the head when it was cut off called thrice upon the name of Iesus: If the water did flow, it is to be known that sometimes too we have seen whey come out of the *Axillar* by the *Thoracick Lacteals*, with which both the vessells of the *Abdomen* and the *Thorax*, which at other times were full of milk, were swoln; and that the man having been long in prison, and gone many journeys, and suffered abundance of misery, and so weakened, had gathered great store of serous blood and *Chylus*. But if the head likewise when it was cut off called upon the name of Iesus, the same was the reason in him which was in that man in *Francis Verulam* his history of life and death *Art. 15. Sect. 32.* who being imbowell'd by a punishment in use with the English upon the dead bodies of Traytors, after his heart was quite plucked out, and was in the hangmans hand, he was heard to bring forth three or four words of prayers,

It may be demonstrated by many evidences, that the *Chylus* contain'd in the *veins* of the *Thorax*, comes out of the receptacle or the new *milkie Glandules*.

1. it comes not from above, for straining and griping the neck and joynts it yeelds nothing but blood.
2. If we presse the *abdomen*, we shall see the vessells of the *Thorax* swell, and the liquor to be brought down to the *Subclavials*, which likewise you will see if you open the vessells, that from the inferior parts it creeps upwards.
3. The *valves* looking upward shews us the way of the same course that it has.
4. Those *veins* which being tyed beneath the *Clavicules* or in the middle of the *Thorax*, doe from the *ligature* upwards look blank, they swell downwards.
5. Lastly, just such *Chylus* as is seen in the *Glandules*, or in the receptacle, such likewise is seen in the *Milkie veins* of the *Thorax*, whether it be white or wheyish, and we have seen this to be done by turns,

turns, that when the whole *Chylus* was expelled, the *veins* of the *Thorax* have swoln with whey, before contained in the *Glandules*.

If you ask why the *Chylus* goes out of the *Subclavialls*, you shall have a certain answer, that it goes not to the head, nor to the joynts, for reasons before given, but that it is carried to the *heart* with the blood that runs down in Circulation, that it may be chang'd into blood, as it was partly the opinion of *Aristotle*. Diverse experiments did evidence this to the first Inventor *Pecquet*. cap. 2. signata. 1. cutting out the *heart* of a live dog, and those things which did adhere to it, and wiping away the blood, there flowd a certain white liquor within the pipe of the *Vena Cava* about the place of the *right ventricle*. 2. He opened the *Vena Cava* from the *Diaphragma* to the throat, where this liquor did appear flowing, free from the mixture of blood: 3. There settled a white liquor within the *vein*, even from the *Subclavi-*

al branches to the *Pericardium*, in all things like the milkie juyce of the *Mesenteric*. 4 We made another experiment often, at *Hafnia*, with bellows, and a hollow pipe, which making a little hole, we put into the *Milkie vein* of the *Thorax* beneath the *Claviculus*, and sent in wind and water by blowing in't. They did rise up and swell, not only the vessells towards the *Axillar vein*, but that part of the *Axillar* which is towards the heart, and streight the right ear and the right ventricle of the heart it self, then the lungs by the *Vena Arteriosa* which was swell'd with water and blowing. Whosoever shall make tryall of this, I will engage he shall never fail, unlesse the *Tunicle* of the veins of the *Thorax*, which is very thin, being hurt, or falling flat, stop the hole which you make.

C H A P. XIV.

*The profits arising from them in the
Practise of Physick.*

FROM the first use of the *Lactea* I will explain several *Phænomena*, which either the first inventor did not think of, or else neglected them, and which hitherto kept Physicians in doubt.

1. The *milkie veins* of the *Thorax* do receive their restorative force from medicaments, nutriment, and cordials, or out of the stomach, or *Oesophagus*, by the *Glandula Lactea*, and carrie them streightway to the *Heart*. Hence it is, that so quickly cordials, drinking of wine, vinegar, and other things, restore the strength, & sometimes presently at meat a man is strengthened in his nature, and his hunger staid, by reason of the milkie branch which is near the *Oesophagus*, and the short passage of the rest of the *Lactea* to the heart. Besides vulnerarie potions,

or pectorall drinks, come by a shortest and surest way to the heart and lungs, when by the long ways about through the veins, they cannot come so safe and so secure. Noxious things too and poison, by the same swiftnesse overwhelm it, destroy its harmony, and infect the spirits.

Herm. Conringius most famous professor at *Helmstadt*, being asked his opinion by me in a Letter, greatly doubts. For first the way from the liver and *Vena Cava* of the *Abdomen* to the heart, seems to be as ready, and it appears too, that before that connexion, there are branches spread into the *Cava* in that part which is next to the heart. Secondly, there is found in that *Milkie vein* of the *Thorax* nothing till three-hours after repast, so that from thence it should seem that the *Chylus* which is made up of the grosser food, is brought that way, which cannot be so easie and fit for restoring the vigour of the body. Thirdly, this same

same eminent man in his book of *Animal fire*, has prov'd that the strength of the bodie is placed rather in that *Animal fire*, which is nourished by the fattest parts of the blood, possibly by true arguments.

Truly, that I may friendly answer my great friend, it is plainly manifest, that the *Chyle* is carried by as short a way, and the strength restored, by these milkie branches, first observ'd by him, which are inserted into the *Cava*. Moreover, there is a great difference in the *Cava* which goes through the *liver*, nor the way so safe or short, for going through the *Parenchyme* of the *liver* and the dispersed little *veins*, it is delayed, and the force of cordials is either diminish'd or dispers'd into more parts. But the *Cava* of the *Abdomen* suck nothing from the *Lactea*, or very little, being most busied about the returning of the *Arterial blood*. It is certain, that after finer fare there is *Chylus* found in the *Milkie vein*.

of the *Thorax*; but if sometimes it be not found, we will impute that to its sudden passage to the *heart*; and I did imagine that I saw some such thing lately in the carcase of a man which was found. He had been well fed some hours before he was hanged, and about time of his execution he had drank wine very freely. But opening his *veins* there neither appeared *Milkie veins* any where, nor was there any *Chylus* in those of the *Thorax*, and yet it is most certain that the wine went to the *heart*, because he was so void of fear and scorn'd death, and wheyish choler which flow'd out of his *pap. veins*. We shall see afterwards whether thick or thin *Chylus* only go this way, or both. Lastly it is not doubtfull, that the strength of the animal fire, is nourished by fat blood, which the man we commended has learnedly prov'd according to his custome, and we thought of some such thing in our book of the *light of creatures*, but it comes all to one thing, because the

the fattest of the blood is fatned by the *Chylus*, concerning the ways of which we now dispute.

2. The *Milkie veins* of the *Thorax* which are lately invented, do lay open the easie and ready be-
getting of diverse diseases.

1. Now the consent of the sto-
mach with the *heart* is clear,
which was hitherto sufficiently
controverted, nor shall we a-
ny more fly to the *nerves*, ob-
scure ways, and other evasions,
because these ways are appa-
rent.

2. Syncopal feavers which rise
from raw humours have their
beginning from hence, which
Galen 12 *Method. Med. c. 3.*
deduces from the offense of
the mouth of the stomach.

3. Beatings of the *heart* by reason
of too much meat, or by whey-
ish humour superabundant ari-
sing from drink, has their depen-
dencie upon these. Of the rest
you must see *Piso*, as likewise
of the drop sic of the *Thorax*.

4. The changes of the pulse after meat, which therefore ought not to be taken notice of by a wise Physician. Yea the interception of pulse in intermission of pulse is caused by the obstruction of these *veins* in the *Thorax*, whence the blood, which would be plentiful otherwise, cannot be diluted but coagulates. Hence *Guido Petrus*, a man of great Learning and judgement, saw at *Paris* a man who had been long sick of an intermission of pulse, in whose corps being dissected the great vessels of the Heart were full of blood. And that I have likewise many times observed in corps suddenly dying which I have dissected. *Panarolus Pentec. 1. Obs. 31.* in a most hot feaver after the man was dead he saw at *Rome* a heart scorched like a roasted Pear, without any water in the *Pericardium*. Whence those that are in feavers both want drink and

and doe desire it. By the obstruction of these *Lactea* no doubt *Robert de Marca* died, in *Smetius Lib. de Miscel* 10. the *venricles* of whose *heart* were full of thick blood. And every where we meet with such examples.

5. That there comes sudden death by eating too much, which could not passe with that swiftnesse through the by-ways of the *liver*. *Platerus lib. 3. Obs. p. m. 652.* tells us of a certain *Hydropick* woman, that after she had voided the water, did eat extraordinary, whence being taken with a vomiting and pain of the *heart*, shee died immediately.
6. Wheresoever there is a bunch on the back either outwardly as in a *Gybose*, or inwardly or laterallie, wheresoever the joynts of the back are distorted or deprav'd, there likewise the *wilkie veins* of the *Thorax* are oppressed, whence

Of the Lacteal Veins

whence there is an *Atrophe* of the body, a losse of appetite, and vomiting: You may see examples in *Galen* in diverse places, *Heldanus Cent. 5. Obs. 65* and others.

C H A P. XV.

That all the Chylus is not carried by the milky veins of the Thorax to the heart, but some to the liver by the Lactea of the Mesenterie.

Here remains a great controversy, whether all the *Chylus* through these new passages of the *Thorax* goes to the heart. So indeed beleeves *Pecquet*, and with him those three very learned men; *Mantellus*, *Mersennus*, and *Auzotius*, by whose eloquent Letters *Pecquets* discourse is adorned, because they found no milkie veins going towards the liver, and that therefore they were all deceiv'd that hitherto did attribute sanguis

guification to the *liver* with *Galen*, when *Aristotle* is rather true, that the *heart* only makes blood.

But they must be reconcil'd with other *Anatomists*, and with us too, if it be possible, lest we should bury the *liver* in oblivion, which for so many years has very gloriously carried the office of Sanguification. In my judgement new inventions are to be embrac'd with open arms, but in so far as truth and nature will suffer us, antient Axioms are never to be condemn'd without pregnant reason.

If by an indifferent conjecture I can reach any thing, I think that the *Heart* and the *Liver* shares the work betwixt them, that either promiscuously both of them receive nutritive humors, or dividing the duty, this receives what is thin, and that that which is thick. Let any man chuse what may be most agreeable to Truth and Nature, for it is most certain that the *Thoracick veins* onely are not able to carry all the *Chylus*. No light
suspici

suspitions seem to perswade me, that the *Liver* does draw that part of the *Chylus* which is most slowly concocted in the *Stomach*, and needs a longer concoction, or that it does admit it, being driven towards it. And that the *heart* does draw the thinner *Chylus* through *Pecquets veins* before it receive its full perfection in the *stomach*; that by a sudden change it may transform it for the restoring of it self and the bodie. Yet there are things which show, that by both these inwards both thin and grosser *Chylus* are drawn, either at the same time, or successively, whether it be of their own accord or by urgent necessity. First let us see that the *Liver* is not to be put out of this rank; for,

I. Many have observ'd, That the milkie veins of the *Mesenteric* comming through the *Pancreas* or greater *Glandules*, and the sides of the *Porta*, are grafted into the very *Liver*, who must be better beleaved than *Pecquet*; *Fallapius Ob. 3.*

of the veins, Although by the default of the age wherein he liv'd he had no knowledge of the *Vena Lactea*, yet he found in the Concave part of the *Liver* certain little passages, which end in the *Pancreas* and the *glandules* adjoyning to it, which carry an oylie white substance, and somewhat bitter, which *Riolan* ill applies to the *Ductus Varsurgianus*.

Afterwards *Asellius* the first finder out of the *Lactea*, did find their insertion into the *Liver*, and set it out divided into two branches in his two Figures III. and IV.

After him, all that applied their pains and knives to dissection observ'd the same; the number of which cannot be easily reckoned. Amongst them, *Iohannes Wallens*, sometimes my most deserving Master, did observe it in great lean doggs, That some of the *Vena Lactea* by a continued passage did end in the *Mesenterick* branch, some in the *Vena Porta*, some in the

the *Cava* of the *Liver*, and at some time some few of them did end in the *Vena Cava* neer the *Emulgents*. That which we saw whilst we were with him, we have had often experience of since ourselves; and lately a learned man *Jo. van Horn*, an old friend of mine, did demonstrate it against *Io. Rivian*, *Exerc. 2. ch. 3.*

Nat. Highmore an Englishman, and a very late writer, an accurate man, and well skill'd in the *Anatomic of Creatures*, did see and has set it down in curious *Cura lib. 1. p. 2. c. 7.* that the *Vena Lactea* comming from the *pancreas* in greater Branches, and passing every where through the sides of the *Porta*, which in some places they environ like a ring, not only with two branches but with more yea with seven, easily shown after death, they enter under the *Cava* of the *liver*, and thence are carried into the *Parenchyme* of the *liver*, and are there dispersed every where till they be lost.

I my self a few years agoe in a
scul-fish of both sexes did not only
find out *milkie veins* very often,
but likewise the insertion of them
into the *liver* so much controver-
ted, & shewed them to very many
men most skillfull in *Anatomic*.
Wormius, *Sperlingius*, *St. Paul*,
Furenius, *Pouchius*, &c. who
can still bear witnessse of the truth
of that which they saw. And it was
that third *lobus* of the *liver*, which
is lesser and softer, which a milkie
and white branch big enough did
enter from the great *glandule*
which was plac'd at no great di-
stance, and was full of milkie hu-
mour, to which many of the *La-*
tea from the *Mesenterie* and *ap-*
pendixes of the stomach did come.
I did explain it by a figure which
is extant in my reformed *Anatomic*.
That I might the better know the
truth I did spend this whole winter
in looking into the entrals of dogs,
and opening severall of them after
repast, on our theater, I made an
experiment before many that were
pre-

present both great and small, whether or no the *lactea* did enter into the *liver*, which we had many times seen before, and now *Pecquet* denies. Behold a great many white *fibers* did appear by the *liver* going through the *Porta* being sunk into their own *membranes*; as *Asellius* and *Higbormus* does describe them sometimes manifestly swelling, especially with a wheyish humour which appears through the *tunics*, but either of them or any of them being opened did send out an ichorous *Chylus* - not so white as that *Chylus* uses to be which vanishes; Whence *Dr. Petrus Buredeborius*, a most learned man, taking part with *Pecquet*, who by chance was present whilst I was operating, being then on his journey towards *Christina* the incomparable Qu. of the Swedes, and the miracle of their sex and age, did both deny that it was the *Chyle* vessel or that it was *Chylus*. But seeing it is not blood, nor a *vein* of the *Porta*, nor any other known vessel, I thought

it altogether to be taken for a *Lactea*. That vanishing colour of the *Chylus* uses to be like raw slegm, which notwithstanding with further concoction grows white, as that which appears first in the Paps and in the Womb, from which we say that the Child is nourished; or lastly it is a wheyish humour separated from the *Chylus*, and takes the same passage. Certainly we see in many such a wheyish *Chylus* both in the receptacle and in the milkie veins of the Thorax, yea that sometimes the whey did by succession come after the white *Chylus* in all the *Lactea*, as well those of the abdomen as those of the Thorax, whence the same will be the condition of the *Lactea* by the liver, as in those by the heart, since successively they are filled with the same liquor.

Hitherto no man has found this insertion in man, though no man doubts but there is such; Ye: we did demonstrate fully *fibers* white with

with such ichorous juyce creeping with the *Porta* to the hollow of the *liver*, which could not be fibers of the *membranes*, because, 1. They were hollow, 2. They did pour out juyce, 3. being of a whiter colour than the fibers of the *membranes* they were better seen.

II. The *liver* being diseased in a dropſie, Scyrrhus, and other diſeaſes, the Sanguification is endamaged. Therefore in its ſound eſtate of concoction it will receive ſome *Chylus*. Though dropſies will grow upon perſons ſometimes and not hurt the *liver*, yet the *liver* in ſuch of them as have been cut up hath very often appeared affected, and the outward ſwelling of the right *Hypocondre* manifeſts it. In *Wierus* in his fourth Book *de Praſt. Dam. c. 16.* in the corps of an Hydropick maid at *Monſpel-lier*, there was found two worms a ſpan long, of which one had ſeated himſelf in the paſſage of the *bilis* to the *Duodenum*, the other going to the *liver* it ſelf had ſeaſ'd upon

upon the very gibbous part of the
liver. *Hildanus* in a Cachochi-
 tick young man saw the *li* *er*
 bloodlesse and Scirrhus in *Obs.*
Chir. and he likewise saw in a Ca-
 thectick Smith many little *Apo-*
temes. In the dissection of some
Hydropicks, *Zacutus* did find l. 2.
Prax. Adm. obs. 39. 45. The *li-*
ver sometimes stony, and some-
 times in place of it a masse of flesh.
 And *Car. Piso D. Illuv. Seros.*
 307. advertises us, that in the
 dissection of dead *Hydropicks* that
 same swelling of either of the two
 inwards, either the *liver* or the
spleen, is almost the only cause.
 Certainly the most ordinary cause
 of an *Ascitis*, which we have like-
 wise often seen. *Jac. Bon.* in his
Obs. opening up the Body of an
 English Souldier, which by an in-
 flamation of the *liver* first, and
 afterwards by extreme laanessse
 did die, instead of the *liver* he
 found nothing but the *membrane*
 that covered it thick enough like a
 Sackell. Other things we meet
 with

with in other Authors, and it were tedious to remember all observations to this purpose. But in such a dropſie the *heart* ſupplies the life which remains, and the Offices of the blood, but becauſe it cannot doe it alone without the help of the *liver*, the man dies. Nor does the ſtraining facultie of the *liver* which *Pecquet* tells us of avail any thing alone, for that would be good in hot diſeaſes which are begotten of hot blood, not ſeparating of the *Choler* but by no means in cold diſeaſes, as for the moſt part are dropſies, *Scirr*s, &c. Whether likewiſe are to be referred the examples of perſons diſſected, who had been troubled with inflammation of the *liver* in *Nic. Fontanus* 1. *Obſ. Med.* p. 90. *Dom. Panarol. Pentec.* 1 *Obſ.* 37.

III. By hindering of the Sanguification of the *Liver*, either by the incomming of ſome *Chylus*, becauſe all the *Chylus* comes to the *Thorax* by new paſſages, there comes ſuffocation many times, and dif-

difficulty of breathing. So *Piso* tells us of *Ioban. l' Alman*, the Receiver of *D. de Quarimi*, who dyed of a stopping of his breath in the Hospital of *St. Anthony*, in the Moneth of *May*, p. 197. that in his body the *liver* was found scirrhous, together with the *Spleen* turn'd into atter. And often, because all way of the *Chylus* to the veins of the *Thorax* is stopp'd, that which is superfluous they vomit up again. So *Mr. Vignerou* in *Temple-lane* complained of his stomach, and found a kind of weight upon it, and did vomit often, opening his body his *Liver* in the upper part did stick to the *Diaphragma*, and that very *Liver* was rotten, *Ballonius* in his l. i. Conf. 43. in Annot.

IV. The *Liver* being found should make blood, when the *heart* does suffer, and the veins of the *Thorax* doe bring no *Chylus*, either the passages being stopp'd or streightned, or by default of the *heart* which receives it, or of the

E lungs

lungs moving, or of the *Diaphragma*, or the *muscles* of the *Thorax*, and other parts. So have we seen in a man, and many doggs, the *Liver* without all hurt, but the *lungs* diseas'd; whence indeed in the *Abdomen* there was great abundance of *Lactea*, but the *veins* of the *Thorax* were lank, without manifest appearance of milkie humour. Therefore the *Liver* did here the office of the *heart*, as many times the *heart* helps the *liver* being diseas'd; but unlesse both these inwards be sound, there is never perfect nutrition. I saw two *Hydropick* maids, whose right *Hy-pocondre* were hard and swell'd, and yet the *menstruous* blood which flow'd in great enough abundance through their *arteries*, was laudable enough. So a *German* Soldier in *Bontius Obj. Ind. 7.* liv'd a whole year after that his *Colonum* and *Mesenterie* were quite consumed; in whom truly there was no distribution of the *Chylus* thorough the *liver*; it may be it was distri-

distributed through the *Receptacle*, or the *Milkie veins* of the *Thorax* inserted into the *Cava* and the *Oesophagus*.

V. There ought to be a proportion of the *Milkie vessels* with those *Vessels* which receive the *Chylus*, whether it be the *liver* or the *heart*. But there is no proportion betwixt the *Milkie passages* of the *Pancreas*, and those of the *Thorax* to the *heart*, or *liver*, if either one or tother doe only carry *Chylus*. The *Milkie passages* in the *Thorax* are little enough, and the little holes to the *Axillarie veins* are too little, too, then that they should admit of the carrying through of such a great quantitie of *Chylus*: and so the vulgar *Lactea Mesenterica* are lesse which goe from the *Pancreas* to the *Liver*, than they are in the whole *Mesenterie*. Therefore neither this way nor that way all the *Chylus* can be sent, but partly this way, partly that way; for a part of the *Chylus* descends to the

heart by *Pecquetus* his *Receptacle*, and a part of it to the *liver*, either out of the *Pancreas* immediately, by *Asellius* his *Milkie veins*, or mediately, by the *Porta Cava*, and *Emulgents*.

VI. There is for the most part in Brutes one *Receptacle* and a small one, but abundance of glandules and *Milkie veins*. But in men the new *milkie* glandules are little, and their concavities scarce apparent.

VII. That is ordinary in Nature, and in nothing contrary to the *Oeconomie* of our body, to draw humors of the same sort two ways; so it streins the thinner blood through the *Septum* of the heart, out of the *right ventricle* into the *left*, & circulates the thicker and more abundant part through the *lungs*. *Pecquet* himself grants that a part of the *Chylus* goes by a *Chylus path* to the heart, and the wheyish part to the *veins*.

VIII. Nor do I want authorities whilst I endeavour a harmony
be-

betwixt the *visceras* and mens opinions, *Aristotle* being most addicted to the *heart* of any, in his *1. 3. de Par. Anim. c. 12.* confesses that the *liver* next to the *heart* has most affinity to the blood. Most famous *Conringius* in his most learned Letters which he sent to me, though he ascribe lesse to the *liver* than seems fitting, Yet he likewise denies with me that all the *Chylus* is carried through the *veins* of the *thorax*; only he deserves to be heard himself. Nor does the abundance of *Milkie Chylus* and narrowness of the *vessells* hitherto found out, which are fit to carry the *Chylus* one of the *Receptacles*, any where else suffer me to doubt that there is other ways as yet unknown. Truly that it is a thing impossible that it can all goe through that passage found out by *Pecquetus*, and the little *veins* are too few and too narrow, which both by me and others were lately observed to be inserted into the *Vena Porta*, the *Cava* of the *liver*, and the *Vena cava*, whatever *Pec-*

quet ſays to the contrary. Ten years agoe I did ſuſpect ſomething of that which is ſet down in the 8 Page of that book of the blood, which was lately publiſhed at Batavia; I will henceforth if I have leiſure more earneſtly ſearch after, yea thou wilt find it moſt happy Bartholinus; and the diſverſe connexions of the Milkie veins do cauſe me ſo much the more encline to the opinion of the antient times concerning ſanguification as Aristotle calls it, that is to ſay that the *ἐξαγωγή* or firſt rudiment of blood is made every where in the veins and therefore not in the Liver but by accident, but it is compleated in the heart becauſe there is the greateſt heat, not that all of it juſt at that time when it comes into the Heart is preſently perfected (For the raw iuice which is amongſt the blood hinders me to believe that, which no doubt is brought through the Heart, and yet it is not fully concocted) but which notwithstanding meerly by minding its colour could never attain

attain its last perfection. Certainly that fewnesse and narrownesse of the *Milkie* passages which goes to the liver, doe not permit us to believe that the liver has afterwards any sanguificative vertue. And it seems fitter for the nature of things if the *Chylus* in diverse and many places should be mix'd with the *Venal* blood, than if it should be all made at the same time and place; this truly is much harder than that other, &c.

C H A P. XVI.

*What manner of Chylus passes the
Milkie Veins of the Thorax.*

SO has Nature elegantly divided the double insertion of the *Chylus* passages because the *Chylus* was to be brought to two organs of sanguification. And since in the right side she has fram'd the insertion of them into the liver, she has almost plac'd nothing in the left, but the entrance of the *Mil-*

kie veins of the *Thorax*. But whether thin *Chylus* is carried to the *heart* by those of the *Thorax*, and thick to the *liver* by those of the *Mesenteric*, we must in few words enquire.

I have many evidences that only thin *Chylus* is sent to the *heart* by the *Receptacle* and the *veins* of the *Thorax*. Certainly *Plato* seems to have been of that opinion, who would not have the *heart* to be the beginning of all blood, but only of it which goes forward with force and leaps, as *Galen* tells l. 6. of the opinion of *Plato* and *Hipp*. The high insertion of the *veins* of the *Thorax* receives nothing but that which is thin, and light, and fit to ascend upwards: but the *liver* easily receives, being plac'd below, that which is grosse and falls down by its own weight; To which the streightnesse of the passages have a reference, yea those little holes by which they do open into the *subclavials*, sometimes but one, fenc'd only with a weak valve, that

that by grosser *Chylus* it might be easily broken; Nor ought the grosse *Chylus* to be carried into the *Heart*, which has not been sufficiently delayed and concocted in the *liver*, for by the heat of the *heart* it would rather be scorched, or burn a man, or by its continuall *Systole* or contraction be returned impure to the nutrition of the parts, from which a hundred diseases & a very ill nutrition would arise: The *receptacle* receives nor expells no other but such as is fine, because there are hidden entrances by which the *Chylus* comes, and it is swoln with *Chylus* before that which is grosser be concocted in the stomach. Hence it is that it is joyn'd to the *Reins*, the *Capsula Atrabilaria*, and the *Emulgent Arterie*.

Nor is there wanting arguments to prove the contrary, that the thin *Chylus* goes to the *liver*, and the thicker to the *heart*, for *Aacretius* in his 4. Book *de Morb.* affirms that Cholerick humours

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come

Of the Lacteal Veins

come only from the *liver*. And three or four hours after repast, when the grosser *Chylus* is not as yet concocted in the stomach, the *Lactea* near the *liver* are sometimes found wheyish, but in those of the *Thorax* presently after meat you shall find nothing.

But I yeeld neither way, because I lov'd alwayes indifferencie; to wit, it is not unlikely that both the *Chylus's*, the grosse, and the thin, are sometimes distributed to the *heart*, sometimes to the *liver*, according to the conveniency or necessity of the passages, but especially that which is more liquid and fine goes to the *heart*, either together, or by turns. In the dissection of some dogs four hours after they have eaten, we see the *Receptacle*, the *veins* of the *Thorax*, and the *Lactea* of the *Mesenteric*, to abound with milkie *Chylus*, the stomach being not as yet disburthen'd from grosser nourishment. In others dissected at the same hour the forenamed ways appear'd.

appear'd full of shining whey. In others, by turns, whey and milk went the same way. We thought fit to look into others seven hours after, and we found them nothing differing from the first; but also we found, that those passages as well in the *Thorax* near the *axillar veins*, as those in the *Abdomen* near the *liver* did shine, and were full of whey. A fellow that had kill'd an Infant, being refresh'd with a large breakfast about six hours before he was hang'd, and drinking wine betwixt whiles, being dissected, did still retain a part of the meat, and of the grosser and thinner *Chylus*. The milkie *veins* of the *Thorax* were not much to be seen in him, but the new milkie *glandules* appear'd full of white *Chylus*, and about his *liver* were white *fibers*, and his *Mesenterie* full of white *veins*. The other Thief having fed after the same manner, and drunk more, shew'd us no *Chylus*, neither in the milkie *veins* of his *Abdomen*.

Abdomen not in those of his *Thorax*, yet was he very sound, and his stomach was stuff'd with both sorts of *Chylus*. From these and the like observations we do gather, that at all hours both those liquors are dispers'd into both these inward parts. Truly the *Lactea* that end in the *Liver* are as small as those of the *Thorax*, but that they go beyond them in number, and multitude of branches. Yet in time of necessity I cannot doubt, but that the more subtle part of it passes through those of the *Thorax*; for taking meat or a cordiall potion after fasting or decay of strength, certainly hunger is stayed, and strength is restored, because the more subtle part can passe through the lank and empty passages, but the thicker expects a longer concoction in the stomach,

It is hard to be said whether in the receptacle *Chylus* is only heaped up for the veins of the *Thorax*, and in the *Pancreas* for the *Liver*.

It

It is the opinion of *Pecquetus* that all the *Chylus* does flow into the *receptacle* and its *Pancreas*. On the contrary, those that take the part of *Asellius* do affirm, that the *Pancreas* is likewise interservient to the *liver*; pressing the *Pancreas* you shall see that it flows to the *receptacle*; the communion of the *Lactea* which goes out of the *Pancreas* shews that there is something transmitted to the *liver*, and the same juice in them being alike, both here and there. Yea in men and in dogs we have observ'd a common insertion of the *Lactea* from the *receptacle* to the *liver* near the *Porta*, so that we suspect, that out of the *receptacle* the *Chylus* is not only protruded to those of the *Thorax*, but to the *liver* too, as likewise the same is distributed out of the *Pancreas* of the *Mesenterie* to the *liver* and to the *receptacle*. The placing of both the *receptacle* and the *Pancreas* does make us believe undoubtedly, that the *receptacle* and the *Pancreas*

as do conspire to one common use: for if the *receptacle* ly upon the middle of the *vertebres*, We have observed that the *Pancreas* is lay'd directly upon it. In the rest, it may be every small *Glandule* of the *Mesenterie*, do either serve the *receptacle* or the *liver*, and communicating their branches every way, divide the duty.

Pecquet indeed did not find that great *Glandule* of *Asellius* in the *Mesenterie*. p. 15. because in household creatures it is for the most part wanting, or certainly is divided into more little ones, and those are five, as it is in *Wallenius*. He found only three near the *Emulgents*, one long on the right side, and two round ones on the left, which receive the *Chylus* passing through its conduits, and return it to the *receptacle*. But we cannot set down a certain number of the *Glandules*, being diverse according to the diversity of the Subject in which they are. *Asellius* & *Higbormus* saw a great one

in the middle, we have seen it very often not only in men but in dogs. The rest being lesse cannot be set down in certain number, whether it be in men or in brutes, which *Pecquet* should have observed if he had look'd into so many guts as he bragg'd of.

C H A P. XVII

The Liver is further vindicated.

P*ecquet* about to take away all majestie from the *liver*, because he thought it somewhat unfit for the refining of blood, lest that noble part should be thought to have been made in vain, he assigns it another office. If we believe him, there are three uses for it; The first use of it is to strain the blood from the *Choler*; And then that it should perform the office of a pestle in thrusting the *Chylus* out of the stomach. Thirdly, that by its warmth it may furnish the stomach.

mach with heat. We may easily grant him all this, If he will be but as bountifull to us. We doe add, and that for good reason, that the chiefe action of the *liver* is to concoct the *Chylus* whether thick or thin into blood which appears by dissection, and the insertion of the *Milkie v. ins*, which otherwise would be in vain. But concerning this action of the *liver* wee have spoken before with greater earnestnesse, and now many have been about it; But if diligent care find the businesse to be otherwise, I shall willingly vail to experience, and I hope I shall get leave to ask pardon; hoping to make amends if I have erred any way in this. That he may the more securely triumph over the *liver*; he separates all the *Choller* from the blood in the *liver*, as being an excrement of the second concoction, not of the first from the *Chylus*. It had been for his commendation to have sewed this skirt of the condemn'd

demn'd liver upon another Coat. Before Pecquet, Aristotle and Conringius agreeing with him did oppose Choler. de Gen. Sang. cap. 15-16. 17. Pecquet seems indeed to contradict himself, cap. 12. of the motion of the Chylus, p. 86. I cannot tell whether it be by the fault of the Printer, for being to prove the straying faculty of the liver, he denies that Choler is an excrement of the second concoction. Hence if it be of the first concoction, it will be directly separated in the Lactea: Yet I believe it is the fault of the Printer, for in the next page he proves it to be an excrement of the second. Whatsoever it be, he does confound the excrementitious Choler with that which is alimentative, this is in all the warmer blood, but that in the Liver is separated from the Chylus. If this do not please him, it may be it will like him better to have excrementitious Choler voyded at both places. For the Choler is separated in the liver from.

from the hotter *Chylus*, in the *liver*, again through the *Celiac* *arterie*, there comes another together with the blood which is generated by the *heart* being hotter, and the parts. Whence there is two passages for the *Choler* in the *liver*, the *Chylidochus* of the grosser, and the *Cystis* of the thinner, even as the whey of the blood is partly purged by sweat, partly goes into the *pericardium*, partly into the hair, partly it is purged by the *emulgent arteries* and the *veins*; so in our businessse, the *liver* separates the *Choler* from the *Chylus* which it concocts, and in the same place another *bilis* from the blood is departed, which was made in the *heart*, of th' other *Chylus* brought through *Pecquets* passages of the *Thorax*. Sweet meats hot and dry doe for the most part leave *Choler* in the *Chylus*, especially if the *liver* be overheated. *Pecquet* ought not to deny this, because *Cholerick* men have dayly experience of this, and *Conringi-*

... who is many times commended according to his deserts, grants, *fin. c. 15. Helmontius* found in a French man, *rr. Rest. Pylor. Se⁷. 24.* that the *Chylus* is made in the stomach the *Pylo-*
rum being shut and stopped with a door, which could never come of the *liver* or its *bladder*, for that door would have hinder'd or stopp'd the entry of the *Choler* into the stomach. *Hippocrates* and *Harvey* have already satisfied us concerning the *Choler* in births, who have provd that they are nourished by *Chylus* or melting humor.

C H A P. XVIII.

Whether or no the Milkie Veins of the Thorax reach to the Paps.

IT does not seem altogether impossible, that these neighbouring *veins* of the *Thorax* contribute something to the distribution of the Milk in the *Paps*. *Marinus*
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in his 4 book Anatom. which *Galen* drew into a compend, and he says in his book which he has written concerning his own writings. *Chap. 3.* writing of the vessels of the *Paps*, whom if the Fate had preserved to us, perchance he would have given us light in this businesse. There were some that affirm'd that in the *Thorax* of a man, they saw Milkie branches deriv'd to the *Paps*, but I am afraid the nerves descending there have cozen'd them. There are many evidences which together with *Hippocrates, lib. nat. pn.* doe perswade us that the *Chylus* is protruded to the *Paps*, of which I have spoken before my opinion in my reformed Anatomie. Truly Nurses themselves doe confesse when they give suck to Children, that milk does as it were come from their shoulders (there where the *Milkie veins* of the *Thorax* are inserted) not without pain; and take especially care lest they should suck them presently after meat.

eat, for fear the Child should receive the nutriment unconcocted. Besides abundance of things taken in with food, have been observed to have been carried to the *larynx* together with the *Chylus*. To which purpose *Martianus* has set down examples to us which he saw at *Rome*. The wife of a *Mason* of *Rome* having taken a purge gave suck to a Girl which was upon her breast being but a year old, whence immediatly or a litle while after, it had so strong a purge that they were afraid the child would purge to death, but her mother found no effect of the purge. *Hippocrates* observes the same in another woman by taking of an elatereal, as likewise *Theophrastus*, *Dioscorides*, *Varro*, *Masurius*, &c. witnessed likewise by *Arist.* 7 *Hist. An.c. 11*. Hairs sometimes swallowed in drink, are voided out of the *Paps*, either by squeezing, or of their own accord. *Martianus* relates the same of the daughter of *Domitia* of the *Grifons*

sons, which together with the excrement of flowres voyded bran, because her Nurse had eaten coarse bread. There was likewise taken out of the pap of a woman that gave suck a branch of Cichorie, which in her Supper before the woman had eaten. Lastly, *Pamphilia* the wife of *Melphus* drinking six pounds of milk for a purge, it ran very quickly into her paps, and there twell'd them with a great deal of pain. If you ask them the ways they are in doubt themselves. *Hippoc. lib. nat. pueri*, speaks of veins passing to the paps, & womb, but tels us not what ones they are. *Martianus* in his Annotations upon *l. de Carnib.* says that there are some hidden ways to & from the paps. *Castell. l. 2 Emet.* c. 59. suspects, that the matter of the milk is carryed from the stomach to the paps, either by wayes as yet unknown, or by thin porosities in bodies. *Vestingius* in his last Sytagm. does allow ways unknown to milkie vapours, *Io. Dan.*

Horstius

Horstias Manud. ad Med. p. 1.
 Sect. 2. n. 4. does boldly distinguish red and milkie veins in the paps. *I. C. Benedictus l. 4. Epist. Med. 5.* does indeed defend *Hippocrates*, but is satisfied in the correspondence of the paps with the womb. There is nothing more easie than by these new *Lactical veins* of the *Thorax*, to compound this controversie. They are neighbouring to the vessels of the paps, and the *Thorax*, and diffuse their branches every way. You shall easily find it in a woman that is with child, or gives suck, cutting her up after repast.

The experiment will not be so easie in a man, unlesse his paps swell with milk, which is indeed rare, yet it is somtimes observ'd in them and in boys too. Of late a Thief being under our Anatomie, did pour forth the cholerike whey from the *Thorax* through the *pap-veins*. Certainly the *Anastomosis* of the *Epigastrick* vessels with the *pap-veins*, so gallantly chanted by the Anatomists,

Anatomists, is so known to our view, that I have oftner apprehended it away than present? And what could it do in so great abundance of milk? *Riolan*, an approved Anatomist, did indeed see in a woman newly brought a bed an internall *Mammarie* and *Epigastrick vein* as big as a Goose quill; but that was either to be imputed to the retention of blood, or to the womans labour, since the rest of the vessels about the womb which do contain blood are mightily swell'd at that time, as *Beslerius* sets down to the life, *Tab. 3. Uter. Mul.* But likewise the same *Riolan* in his *Prætermissa*, did observe them in a man of *Mark* to be varicous, and reach in length from his *Thorax* to his privities, together with Doctor *Matthews* his Colleg. The most diligent *Highmore* in his *Lib. 2. Disq. Anat. p. 1: c. 3.* in cutting up a live bitch when he had open'd the *sine pari vein*, into which the Intercostals do empty themselves, observes, that there

their flow'd a certain white humor mix'd with blood from the Inter-costals, being just of the same nature with that which was then in the paps, which humor he imagines it received from the *arteries* of the *Thorax* and the *pap-veins*. Yet doe I believe, that the branch of the *Lactea Thorasica*, which is grafted into the *sine pari vein*, has powred into it part of its *Chylus*, since in dogs and in other Animals there is seldom any passage from the Intercostals, or *arteries* of the *Thorax*, to the paps plac'd in the *Abdomen*. Whatsoever it is, I have laid out for Bitches that are with puppie, and Bitches that give suck, for this purpose; about which, when I have ended this Discourse, I will fall to work.

Pecquet denyes that ever he saw the *lactea* going towards the paps, most learned *Anzotius* gives the reason, Because the way does not easily appear, by reason of the position of the vessels. But the contrary seems to be true, since in Brutes

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the paps are nearer to the *Abdomen*, otherwile than it is in mankind, who lifts up their young as *Aristotle* observs. Whence in many dogs dissected by us, we saw a great many milkie veins in the *abdomen*, small in the *Thorax*, and *Erasistratus* observ'd them in sucking Kids about that place. *Galenus* gives us reasons why men almost alone have their paps in their breasts, and most of Brutes in their *Abdomen*, 7. *Vsu Part. c. 22.* and others in other places. *R. Abba*, says, that God plac'd a womans paps in her brest, that the boy might be wise and provident, and that he might suck from his mothers heart, whence he might gain understanding. *R. Jehuda*, lest the Child should be forc'd to see his Nurses commoditie. *R. Matathana*, lest he should suck in a nasty place, as *Buxtorfius* relates out of the tradition of the Rabbines, *Syn. Ind. c. 3.* I with an easie conjecture would adjoyn, if *Hippocrates* his supposition were true, that the

the *Chylus* in the paps of women being rawish, requir'd the neighbouring heat of the heart, which is indeed stronger in the stomachs of dogs and others, nor so open to injury, because in their downward gate the *spinall* is above it, which *Galen* gave notice of before in his last Chapter aforesaid. Let *Castellus* answer to the tother argument of *Auzotius*, and to his rare experience in a thing very likely, l. 2. *Emet. c. 59. p. 180.* I hear that at *Rotterdam* there is newly set out a Book of one *Giffarts*, of the substance or matter of milk; in which, the milk which is brought into *Pecquets* vessel is denyed to be *Chylus*; but I am forc'd to be ignorant for what reasons, or upon what experiment, till the Stationers bring the Book to us.

C H A P. XIX.

Why the new milkie vessels have been hitherto unknown.

Hitherto we have spoken so much of the new milkie passages

sages, following experience and reason. But if after this the knife of Diffectors discover more things and different from these, we do publicly professe, and condition, That we will either adde freely, or change any thing wherein we have err'd. We have appointed our selves the same Law, which reverence due to Nature has confirmed.

For a conclusion, two things we adde, 1. Why such famous vessels of Nature have escap'd the prying eyes of Anatomists. 2. By what administration or handiwork they may be easily seen and demonstrated by others. There may be diverse things pretended for neglecting the observation till now. First we blame envious Nature, because she has favoured this more than all the rest before; she blinds our eyes sometimes that we cannot see those things which are most apparent. This is the defect of our eyes and mind; with a certain evidence of Gods revenge, who

who has given the world over to its own controversies, lest it should find out the truth, and that there may be no end of books, and that much reading may take up mans life, *Eccl. XII. 12.* Since we were sure that all the *Vena Lactea* were carried out of the *Pancreas* to the *liver*, we gave over all search. And so much does the authority of *Galen* prevail, that the turning of all the blood into *Chylus* is with one consent ascrib'd to the *liver*. To this may be added the deeper position of these new vessels to which the eyes and the hands of the searchers could very hardly arrive. Certainly in the bottom of the *Thorax*, no body would ever have sought for any such thing; especially since all the pains has been taken in finding out the motion of the *heart* and blood. These vessels have often been seen no doubt, but either they were taken for nervs, or for emptic *veins*, or for fat, or for little *membranes*: for those of the *Tho-*

~~ray~~ do counterfeit nerves, which
 in all likenesse they represent, or
 truly they are like *fibers* when the
 milkie juyce is squeez'd out of
 them. Both ways through the
 sides of the *vertebres* of the back
 descend the *nervs* of the *Sextum*
par, which now at last we have
 learn'd to distinguish from the
milkie veins of the *Thorax* with a
 twofold mark. 1, Because they
 creep to the sides and end in the
Diaphragma or its *Appendixes*,
 but these either goe in the middle
 of the *spina*, or next to it, be-
 twixt the *nerve* of the *Sextum par*,
 and the *Spina* on both sides, and
 come further down through the
Diaphragma to the *Abdomen* & the
milkie glandules under it. 2. Because
 being cut or tyed they pour forth
 no liquor, nor swell like the *milkie*
veins of the *Thorax*. To which
 there may be added the original
 and insertion of both vessels; The
nervs are drawn out from the
brain, the *Lactes* from the *abdo-*
men, and end in the *Axillar vein*.
 Of

Oftentimes too the likenesse of fat has cozened us. In a cow but newly fed, I did narrowly search for the *Lactea* and their *fibers* in the *Thorax*, but they were so deep sunk in the fat, that nothing did appear to me but little *fibers*, which with a great deal of pains I could hardly distinguish: but the new *milkie glandules* or the *Receptacle* have deceitfully passed hitherto with searchers as well for the *glandules* of the *Mesenterie* already known, as for fat. But that they were discovered to *Pecquet*, the most fortunate of men, having never been before seen in so many ages, it was the gift of fortune that played with him knowing nothing, as by his own ingenuous confession he professes c. 2.

C H A P. XX.

The Anatomical handling of the new vessels.

According to the example of *Galen*, we shall in few words

tell you the administration or Anatomical handling of the new vessels, in favour of those who have not as yet seen them: open the Carcase of a man or a brute, either being tyed fast or hang'd 4, 5, or 7, hours after repast, and removing the *breast* bone with the *Mediastinum* which is annexed to it, presently with strong hand turn by the *lungs* with the bowels which adhere to them on both sides, to the tother side over against the *lungs*, that hidden parts of the back may appear; Then presently with a knife part warily the white vessels or passages shining with whey in them, under the *Aorta* and *Oesophagus* in the middle of the *Spina* of the back, or about the middle of it, from the things adjoyning, and ty them with a fine thread either under the *axillarie vein*, or in the middle of the *Thorax*, and with another ty the vessels of the *heart*, which must be intercepted both above and below, for fear of falling down

of

of the blood ; afterwards cut the
abdomen in two , and seeing the
milkie veins in the *Mesenterie*, and
their insertion into the *liver*, turn
the whole *Mesenterie* together
with the *Intestines* to either side,
that you may see the new milkie
glandules, or the *Receptacle* where
it is placed , and in its connexion
with the *Mesenterie* betwixt the
Lumbar muscles and the *Kidneys*,
and near to the descent of the *Ce-
liacall arterie* , and the *Cava*, and
near to the *Emulgents*. Hence se-
parate the *Intestines* beginning be-
low , and take them out of the ab-
domen together with the *Stomach*
liver and *spleen*, leaving if you
please the *Mesenterie* together
with the *middle glandule* , and the
Pancreas naked ; you shall see the
new *Glandules* white and soft to
the touch , and swell'd with *Chy-
lus* or whey ; which if they appear
not , lift up the *kidneys*, under
which a part of them ules to lurk:
Then that you may see the ascen-
dent milkie branches , cut the *Di-
aphragma*

apbragma in pieces, and accurately free it from the *vertebres*, and take out together the *Aorta*, the *Vena Cava*, and the *Oesophagus*, with the entrails of the *Thorax*, or turn them towards the head to the right point of the Shoulder, and you shall see the whole passage of the milkie vessel in the back, about the most swelling place of the *Diapbragma*, about the fifth *vertebre* of the back, creeping to the *left clavicle*. Lastly lay open the *left axillar vein*, taking aside the first rib, and the *left clavicle*, and so lay open the outward *jugularie* hard by it; In both of them, of both sides towards the head and joynts, stay the blood with a *ligature*, you shall easily see the insertion of the *milkie veins* of the *Thorax*, and if when you have seen the *little fibers* you remain doubtfull, in those of the *Thorax*; drive either wind or water above the *ligature*, and with your finger thrust the *Chylus* upwards, which when you have

have seen, opening the *axillar vein* betwixt the *ligatures*, and wiping away the blood, search for the *valve* or the little holes by which they do manifestly receive either *Chylus* or whey, or wind from those of the *Thorax* either squeez'd or blown into. Frequent exercise will reach the rest. For although there be no more difficult demonstration than this in all *Anatomic*, yet this undertaking is easilier pointed out with the finger than describ'd. They are deceiv'd that acquiesce to things which they have heard, and believe not what they have seen. He must enter the *cave* and solitary place of *Democritus*, where the *Dissector* shall find Divine assistance. We have not those fragrances, nor doe we deceive the buyer, finding nothing after he is entred, but those things which hang at the gate.

F I N I S.